ASSESSMENT OF KNOWLEDGE ATTITUDES AND PRACTICES REGARDING ANTIBIOTICS USE IN KUANTHANI SUBDISTRICT KANTANG DISTRICT TRANG PROVINCE THAILAND

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การประเมินความรู้ ทัศนคติ และการปฏิบัติตัวเกี่ยวกับการใช้ยาปฏิชีวนะ ในตำบลควนธานี อำเภอกันตัง จังหวัดตรัง ประเทศไทย

นางสาวกาญจนชญา ศิริโชติ

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรมหาบัณฑิต

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Thesis Title	ASSESSMENT OF KNOWLEDGE ATTITUDES AND PRACTICES REGARDING ANTIBIOTICS USE IN KUANTHANI SUBDISTRICT KANTANG DISTRICT TRANG PROVINCE THAILAND
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Field of Study	Public Health
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กาญจนชญา ศิริโชติ: การประเมินความรู้ ทัศนคติ และการปฏิบัติตัวเกี่ยวกับการใช้ยาปฏิชีวนะในตำบลควนธานี อำเภอกันตัง จังหวัดตรัง ประเทศไทย. (ASSESSMENT OF KNOWLEDGE ATTITUDES AND PRACTICES REGARDING ANTIBIOTICS USE IN KUANTHANI SUBDISTRICT KANTANG DISTRICT TRANG PROVINCE THAILAND) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: ผศ. ดร. ประเทือง หงสรานากร, 144 หน้า.

การศึกษาภาคตัดขวางนี้มีจุดประสงค์เพื่อประเมินความรู้ ทัศนคติ และการปฏิบัติตัวเกี่ยวกับการใช้ยาปฏิชีวนะ (ยาแก้อักเสบ) ของกลุ่มตัวอย่างจำนวน 396 คน ด้วยการใช้แบบสอบถามที่กลุ่มตัวอย่างตอบเอง สถิติที่ใช้คือสถิติเชิงพรรณนา สถิติไคสแควร์ และ Spearman's correlation ผลการศึกษาพบว่า กลุ่มตัวอย่างส่วนใหญ่เป็นเพศหญิง (ร้อยละ 74.49) เกือบครึ่งของกลุ่มตัวอย่างอยู่ในช่วงอายุ 18-29 ปี (ร้อยละ 45.20) ส่วนใหญ่นับถือศาสนาพุทธ (ร้อยละ 74.75) ประมาณครึ่งหนึ่งของกลุ่มตัวอย่างสมรสแล้ว (ร้อยละ 50.25) จบการศึกษาชั้นมัธยมศึกษาหรือ ปวช. (ร้อยละ 31.25) ประกอบอาชีพที่ไม่เกี่ยวกับการเกษตร (ร้อยละ 68.18) มีรายได้ต่อเดือนน้อยกว่า 7,000 บาท (ร้อยละ 42.97) ไม่มีโรคประจำตัว (ร้อยละ 71.97) และปัจจุบันใช้ยาบางชนิดในช่วงระยะเวลา 3 เดือนที่ผ่านมา (ร้อยละ 78.03) กลุ่มตัวอย่างมากกว่าร้อยละ 40 (ร้อยละ 41.16) มีระดับความรู้สูงโดย (ร้อยละ 40.91) มีระดับความรู้ปานกลาง (ร้อยละ 17.93) มีระดับความรู้น้อย ค่าเฉลี่ยของคะแนนความรู้คือ 10.43 $\pm$ 2.84 โดยมีคะแนนความรู้สูงสุดที่ 16 คะแนน และคะแนนความรู้ต่ำสุดที่ 3 คะแนน กลุ่มตัวอย่างส่วนใหญ่ (ร้อยละ 75.13) มีระดับทัศนคติปานกลางตามมาด้วยกลุ่มตัวอย่างจำนวน 65 ราย (ร้อยละ 16.67) มีระดับทัศนคติต่ำ และกลุ่มตัวอย่างจำนวน 32 ราย (ร้อยละ 8.21) มีระดับทัศนคติสูง ค่าเฉลี่ยของคะแนนทัศนคติคือ 2.49 $\pm$ 0.39 โดยมีคะแนนทัศนคติสูงสุดที่ 3.00 คะแนนและคะแนนทัศนคติต่ำสุดที่ 1.27 คะแนน กลุ่มตัวอย่างส่วนใหญ่ (ร้อยละ 69.59) มีระดับการปฏิบัติปานกลางตามมาด้วยกลุ่มตัวอย่างจำนวน 65 ราย (ร้อยละ 16.75) มีระดับการปฏิบัติต่ำ และกลุ่มตัวอย่างจำนวน 53 ราย (ร้อยละ 13.66) มีระดับการปฏิบัติสูง ค่าเฉลี่ยของคะแนนการปฏิบัติคือ 2.68 $\pm$ 0.22 โดยมีคะแนนการปฏิบัติสูงสุดที่ 3.00 คะแนนและคะแนนการปฏิบัติต่ำสุดที่ 1.81 คะแนน; มีความสัมพันธ์กันอย่างมีนัยสำคัญทางสถิติระหว่างความรู้และเพศ ($p = 0.001$) อายุ ($p < 0.001$) สถานภาพสมรส ($p < 0.001$) การศึกษา ($p < 0.001$) และรายได้ต่อเดือน ($p= 0.005$) กล่าวคือ เพศหญิง กลุ่มอายุน้อย ยังไม่แต่งงาน มีการศึกษาระดับสูง และมีรายได้ต่ำมีความรู้ที่ดีกว่าเกี่ยวกับการใช้ยาปฏิชีวนะ ; มีความสัมพันธ์กันอย่างมีนัยสำคัญทางสถิติระหว่างทัศนคติและเพศ ($p < 0.001$) อายุ ($p < 0.001$) สถานภาพสมรส ($p = 0.008$) การศึกษา ($p < 0.001$) รายได้ต่อเดือน ($p = 0.001$) โรคที่เป็นร่วม ($p = 0.013$) และการใช้ยาบางชนิดในปัจจุบันในระยะเวลา 3 เดือนที่ผ่านมา ($p = 0.005$) กล่าวคือ เพศหญิง กลุ่มอายุน้อย ยังไม่แต่งงาน มีการศึกษาระดับสูง มีรายได้ต่ำ ไม่มีโรคที่เป็นร่วม และมีการใช้ยาบางชนิดในปัจจุบันในระยะเวลา 3 เดือนที่ผ่านมามีแนวโน้มของการมีทัศนคติที่ดีกว่าเกี่ยวกับการใช้ยาปฏิชีวนะ; มีความสัมพันธ์กันอย่างมีนัยสำคัญทางสถิติระหว่างการปฏิบัติและเพศ ($p < 0.001$) อายุ ($p = 0.007$) การนับถือศาสนา ($p = 0.021$) การศึกษา ($p =0.006$) โรคที่เป็นร่วม ($p = 0.003$) และการใช้ยาบางชนิดในปัจจุบันในระยะเวลา 3 เดือนที่ผ่านมา ($p = 0.004$) กล่าวคือ เพศหญิง กลุ่มอายุน้อย นับถือศาสนาพุทธ มีการศึกษาระดับสูง ไม่มีโรคที่เป็นร่วม และมีการใช้ยาบางชนิดในปัจจุบันในระยะเวลา 3 เดือนที่ผ่านมามีแนวโน้มของการปฏิบัติที่ดีกว่าเกี่ยวกับการใช้ยาปฏิชีวนะ; มีความสัมพันธ์กันอย่างมีนัยสำคัญทางสถิติเชิงบวกอย่างอ่อนระหว่างความรู้และทัศนคติเกี่ยวกับการใช้ยาปฏิชีวนะ ($r = 0.204$, $p < 0.001$) กล่าวคือ กลุ่มตัวอย่างที่มีคะแนนความรู้มากกว่ามักมีการปฏิบัติที่ดีกว่าเกี่ยวกับการใช้ยาปฏิชีวนะ; มีความสัมพันธ์กันอย่างมีนัยสำคัญทางสถิติเชิงบวกอย่างปานกลางระหว่างทัศนคติและการปฏิบัติเกี่ยวกับการใช้ยาปฏิชีวนะ ($r = 0.474$, $p < 0.001$) กล่าวคือ กลุ่มตัวอย่างที่มีระดับทัศนคติที่ดีกว่ามักมีการปฏิบัติที่ดีกว่าเกี่ยวกับการใช้ยาปฏิชีวนะ ทั้งนี้ ความรู้ ทัศนคติ และการปฏิบัติเกี่ยวกับการใช้ยาปฏิชีวนะ พบว่ากลุ่มตัวอย่างมีความรู้ที่ไม่พอเพียง มีทัศนคติที่ไม่เหมาะสม และมีการปฏิบัติที่ไม่ถูกต้องเกี่ยวกับการใช้ยาปฏิชีวนะในหลายๆ ทาง ข้อแนะนำจากการวิจัยครั้งนี้คือการปรับปรุงความรู้ ทัศนคติ และการปฏิบัติเกี่ยวกับการใช้ยาปฏิชีวนะให้เกิดความเหมาะสม

สาขาวิชา ...สาธารณสุขศาสตร์.... ลายมือชื่อนิสิต .....

ปีการศึกษา .....2555..... ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.....

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KEYWORDS: ANTIBIOTICS USE, KNOWLEDGE, ATTITUDE, PRACTICE, KAP SURVEY, THAILAND

KANJANACHAYA SIRIJOTI : ASSESSMENT OF KNOWLEDGE ATTITUDES AND PRACTICES REGARDING ANTIBIOTICS USE IN KUANTHANI SUBDISTRICT KANTANG DISTRICT TRANG PROVINCE THAILAND. THESIS ADVISOR : ASST. PROF. PRATHURNG HONGSRANAGON, Ph.D., 144 pp.

A cross-sectional descriptive study was used to study knowledge, attitudes, and practices regarding antibiotics use. The overall sample size was 396 study subjects. The tool for data collection was a self-administered questionnaire. Descriptive statistics, Chi square, and Spearman's correlation were used as statistical measurement. Most of the study participants were female (74.49%), almost half of them were belong to the age group 18-29 years old (45.20%), most of them were Buddhism (74.75%), around half of them were married (50.25%), the majority finished secondary school or vocational school (31.25%), worked in non-agricultural sector (68.18%), had monthly income less than 7,000 Baht (42.97%), had no underlying diseases (71.97%), and currently used some medication within last 3 months (78.03%), respectively. The majority (41.16%) of the study subjects had high knowledge level. The moderate knowledge level was 40.91% and low knowledge level was 17.93%, respectively. The mean knowledge score was 10.43 $\pm$ 2.84. The maximum knowledge score was 16. The minimum knowledge score was 3. The majority (75.13%) of the study subjects had moderate attitude level, follow by 65 subjects (16.67%) with poor attitude level, and 32 subjects (8.21%) with good attitude level, respectively. The mean attitude score was 2.49 $\pm$ 0.39.The maximum attitude score was 3.00; the minimum attitude score was 1.27. The majority (69.59%) of the study subjects had moderate practice level; follow by 65 subjects (16.75%) had poor practice level, and 53 subjects (13.66%) had good practice level, respectively. The mean practice score was 2.68 $\pm$ 0.22.The maximum practice score was 3.00, the minimum practice score was 1.81. There were significant associations between knowledge with gender ($p = 0.001$), age ($p < 0.001$), marital status ($p < 0.001$), education ($p < 0.001$), and monthly income ($p= 0.005$), respectively. Female, younger age group, unmarried person, person who receive higher education, and person with lower income tend to had better knowledge about antibiotics. There were significant associations between attitude with gender ($p < 0.001$), age ($p < 0.001$), marital status ($p = 0.008$), education ($p < 0.001$), monthly income ($p = 0.001$), co-morbid disease of the study subjects ($p = 0.013$), and current medication use within last 3 months of the study subjects ($p = 0.005$). Female, younger age group, unmarried person, person who receive higher education, person with lower income, person who did not have co-morbid disease, and person who used some medications within last 3 months tend to had better attitudes towards antibiotics. There were significant associations between practice with gender ($p < 0.001$), age ($p = 0.007$), religion ($p = 0.021$), education ($p =0.006$), co-morbid disease ($p = 0.003$), and current medication use within last 3 months of the study subjects ($p = 0.004$), respectively. Female, younger age group, person who were Buddhism, person who receive higher education, person who did not have co-morbid disease, and person who used some medications within last 3 months tend to had better practices regarding antibiotics use. There was significant weak positive correlation between knowledge and practice regarding antibiotics use ($r = 0.204$, $p < 0.001$). The study subjects who had higher knowledge score were more likely to have better practice regarding antibiotics use. There was significant moderate positive correlation between attitude and practice regarding antibiotics use ($r = 0.474$, $p < 0.001$). The study subjects who had better attitude level were more likely to have better practice regarding antibiotics use. Regarding knowledge, attitudes, and practices, the study participants have inadequate knowledge, inappropriate attitudes, and incorrect practices towards antibiotics in many ways. The study recommended an improvement in KAP regarding antibiotics use for appropriateness.

Field of Study:……Public Health…… Student's Signature……..

Academic Year:……2012…… Advisor's Signature……..

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LIST OF ABBREVIATIONS

KAP	Knowledge, Attitudes, Practices
OTC	Over The Counter
WHO	World Health Organization

CHAPTER I

INTRODUCTION

1.1 Background and Rationale

Essential medicines are one of the important tools needed to improve and maintain health. However, for many people throughout the world, medicines are still unaffordable, unavailable, unsafe, and improperly used (Hardon and Hodgkin, 2004). Medicines are often used incorrectly; around the world half of all medicines are prescribed, dispensed, or sold inappropriately, while 50% of all patients fail to take their medicines rationally (WHO, 2002 cited in Hardon and Hodgkin, 2004; WHO, 2004).

The World Health Organization's definition of rational use of medicine is "patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community" (WHO, 1985 cited in Hardon and Hodgkin, 2004).

Rational drug use interventions that focus on health worker prescribing can only partly improve the use of drugs (Hardon and Hodgkin, 2004). This is because, as studies on medicines use by consumers have shown, self-medication is the most common form of therapeutic choice and people often rely on informal drug distribution channels as much as on pharmacies (Chuengsatiansup, Sringernyuang and Paonil, 2000). People often have very rational reasons for using medicine irrationally (Hardon and Hodgkin, 2004).

Irrational use of medicines is a major problem worldwide. The overuse, underuse or misuse of medicines results in wastage of scarce resources and widespread health hazards (WHO, 2004; WHO, 2011: online).

Examples of irrational use of medicines by prescribers, patients and communities (Ministry of Health Sultanate of Oman, 2000: online; Hardon and Hodgkin, 2004; WHO, 2004) are listed as follow:

1) Polypharmacy which is represented by multiple drug prescribing and use of too many medicines per patient.
2) Patient driven prescribing, sometimes pressure from patient leads to too many or wrong, clinical insignificant drug prescriptions.
3) Inappropriate use of antibiotics, both over-prescribing and inadequate dosage, for non-bacterial infections.
4) Overuse of injections when oral formulations would be more appropriate.
5) Failure to prescribe in accordance with clinical guidelines due to the lack of specific standard treatment guidelines leading to inconsistent prescribing.
6) Overuse of needlessly expensive drugs where less expensive, generic drugs may be more appropriate. In many countries people rely on branded name drugs when choosing therapy. Branded products are often more costly than the same products under generic name.
7) Inadequate drug information given to patients by the health care providers may be due to pressure of high work load or language difficulties.
8) Inappropriate self-medication with drugs that should be used under the supervision of health care professionals. In many countries people can freely buy any drugs over-the-counter.
9) Patient non-adherence to dosing regimens. They are not using the medicine in the way intended by prescriber. There are many reasons such as forgetfulness, lack of financial support, and unaware of benefits and risks of medicine.

There are numerous studies worldwide regarding inappropriate use of medicines by consumers or patients themselves (Chuengsatiansup et al., 2000; Sleath et al., 2001; Na Nakorn, 2002; Hardon and Hodgkin, 2004; Hsiao et al., 2006; Pagan et al., 2006; Suwan, 2006; Suksomsin, 2008; Kaenjan, 2008; Hanna and Hughes, 2011; Hoan et al., 2011). This research revealed that most people prefer self-medication to doctor or hospital visits. The reasons behind that practice are to save time and money, feeling better from taking care of health themselves, and distrust in health systems.

Inappropriate medicine use worldwide especially on antibiotics uses both in developed and developing countries have been well documented (Kuntee, 1995; Dy, 1997; Chanthapasa, 1997; Aboul-Fotouh et al., 1998; Belongia et al., 2002; Deschepper, Vander-Stichele and Haaijer-Ruskamp, 2002; Parimi, Pinto-Pereira and Prabhakar, 2002; Buke et al., 2003; Emslie and Bond, 2003; Larson, Lin and Gomez-Duarte, 2003; Vanden Eng, et al., 2003; Suttajit, 2004; Al-Bakri, Bustanji and Yousef, 2005; Arroll and Kenealy, 2005; Awad et al., 2005; Chen et al., 2005; Corbett et al., 2005; Alden, Tice and Berthiaume, 2006; Cespedes and Larson, 2006; Grigoryan et al., 2006; Tan et al., 2006; Vaananen, Pietila and Airaksinen, 2006; Al-Azzam et al., 2007; Grigoryan et al., 2007; Kardas et al., 2007; McNulty et al., 2007; Tasci et al., 2007; Hawkings, Butler and Wood, 2008; Mainous, Diaz and Carnemolla, 2008; Raghunath, 2008; Sawalha, 2008; You et al., 2008; Abasaeed et al., 2009; Mwambete, 2009; Panagakou et al., 2009; Barah and Goncalves, 2010; Dameh, Green and Norris, 2010; Grigoryan et al., 2010; Faber et al., 2010; Kaewmang, 2010; Landers et al., 2010; Llor, 2010; Olayemi, Olayinka and Musa, 2010; Sapkota et al., 2010; Togoobaatar, et al., 2010; Fadare and Tamuno, 2011; Jin et al., 2011; Kim, Moon and Kim, 2011; Morgan et al., 2011; Oh et al., 2011; Panagakou et al., 2011; Rousounidis et al., 2011; Shehadeh et al., 2011; Widayati et al., 2011; Gonzales et al., 2012; Grosso et al., 2012; Markovic-Pekovic and Grubisa, 2012; Suaifan et al., 2012). Those numerous studies revealed that people in the community level around the world mostly have incorrect knowledge, wrong attitudes, and inappropriate practices regarding antibiotic use.

Antibiotics are considered among the most commonly sold drug classes in developing countries (Buke et al., 2003; Shehadeh et al., 2011). An estimated two-thirds of global antibiotic sales occur without any prescription (WHO, 2004). The irrational, overuse or inadequate uses of antibiotics result not only in the rise of resistant bacteria but also ineffective therapy, more adverse drug reactions, wasted resources, higher cost of therapy and ultimately more economic burden on national and global health system (Dy, 1997; WHO, 2004; Sumpradit, 2010; Shehadeh et al., 2011). Growing resistance to antibiotics is a particularly serious global challenge and

results largely from inappropriate prescribing and utilization of antibiotics (WHO, 2004).

The studies in Thailand and around the world regarding antibiotics revealed that socio-demographic characteristics are related to the level of knowledge, attitude, and practice.

For instance, knowledge is affected by age. The younger age group of people show better knowledge than older age group of people can be seen in the cross-sectional analytical study regarding knowledge, attitude and behaviors of Ege University academic staff in Turkey by Buke et al., 2003 mentioned that knowledge scores about rational antibiotics use were affected by age. The knowledge score of the youngest group (participants age below 29 years old) was 7.67 $\pm$ 2.68 (from the maximum score of 12) while the knowledge score of the oldest group (participants age more than 60 years old) was 6.42 $\pm$ 3.4 which was significantly different ($p = 0.009$) (Buke et al., 2003). However, the study about antibiotic use in Yala province, Thailand by Kaewmang, 2010 revealed that the younger age group has poor knowledge regarding antibiotics than older age group. The knowledge score of the youngest group (participants age below 26 years old) was 3.85 $\pm$ 1.84 from the total score of 9. The knowledge score of the 26-35 years old group was 4.83 $\pm$ 2.02, the 36-45 years old group was 4.80 $\pm$ 2.23, and the oldest group (age more than 46 years old) knowledge score was 5.07 $\pm$ 2.22 which was significantly different from the youngest age group ($p < 0.001$) (Kaewmang, 2010).

Other socio-demographic factors, such as educational level or marital status, can influence knowledge. The survey by Vanden Eng et al., 2003 revealed that person of lower socioeconomic status, lower educational status, males, younger age group, and elderly have both higher level of misconceptions regarding antibiotics and lower level of knowledge about the potential health dangers of antibiotics (Vanden Eng et al., 2003). The study of knowledge, attitudes, and behavior regarding antibiotics use and misuse among adults in the community of Jordan by Shehadeh et al., 2011 showed that young, single respondent (18-25 years old) were more likely to have better knowledge about antibiotic safety, since 75.8% ($p = 0.002$) were aware of the

harmful effect of the certain antibiotics on children' teeth and 77.9% ($p < 0.005$) were more likely to have better knowledge about possible death by antibiotics allergy (Shehadeh et al., 2011).

The relationship between knowledge, attitude, and practice regarding antibiotics use was seen in many research papers. Knowledge can influence both attitudes and practices. For example, the study of public knowledge and attitudes regarding antibiotics use in South Korea by Kim et al., 2011 said that respondents who had adequate knowledge of antibiotics were more likely to have a positive attitude toward the use of antibiotics (Kim et al., 2011). Also, practice is influenced by knowledge. The telephone survey study of knowledge, attitude, and experience regarding antibiotic use with upper respiratory infections in Wisconsin and Minnesota, U.S.A. by Belongia et al., 2002 indicated that parents with below-median knowledge scores were more likely to perform incorrect practice such as they were more likely to expect antibiotics from doctor for their child's respiratory illness and they were more likely to receive antibiotics for nonbacterial diagnosis (Belongia et al., 2002).

Approximately, there are 10 million populations in southern region of Thailand and almost 630,000 populations are living in Trang province. Most people are working in agricultural sectors such as cultivating rubber trees, planting palm trees, growing rice, and doing fishery-related business. Agricultural occupation contributes flow of money and prosperity, people have a lot of income and they can therefore freely choose medical services. They are affordable to go to private hospitals in city center, go to consult doctor at private clinics or self-medicate themselves from drugstores, and no need to wait for long queues at community hospital or general hospitals.

Kuanthani Subdistrict, Trang Province is the community that researcher interested in studying community antibiotics use pattern and the level of knowledge, attitudes, and practices of community members. Kuanthani Subdistrict is the part of Kantang District. Kuanthani Subdistrict is connected with Muang District, about 7 kilometers from Trang city center. There is a community hospital, Kantang

community hospital, which is located about 25 kilometers from Kuanthani Subdistrict. There is a small health center, Kuanthani Tambon Health Promoting Hospital, located near the community. Because Kuanthani Subdistrict is closely connected with Muang District and the distance from Kantang community hospital is far away from the community. Therefore, Kuanthani villagers are conveniently going to the Trang city center to visit drugstore and buy medicine. Thus it is possible to detect inappropriate practice regarding antibiotics use such as self-medication without consulting doctor and inaccurate use of antibiotics for nonbacterial diseases.

In addition, there are not many studies indicated results about the level of knowledge, attitude, and practice of community antibiotics use in southern region. The studies are formerly placed in Songkhla and Yala Province, but in the researcher's knowledge, there is not available in Trang Province. This study, therefore, aims to assess the level of knowledge, attitude, and practice regarding antibiotics use in Kuanthani subdistrict, Kantang district, Trang province, Thailand.

1.2 Research Questions

1. What are the socio-demographic characteristics of adults in Kuanthani subdistrict, Kantang district, Trang, Thailand?
2. What is the level of knowledge on antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand?
3. What is the level of attitude towards antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand?
4. What is the level of practice regarding antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand?
5. What is the relationship of socio-demographic characteristics, knowledge, attitude and practice regarding antibiotics among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand?

1.3 Research Hypothesis

1. There is a relationship between the level of knowledge and attitude on practice regarding antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand.
2. There is a relationship between socio-demographic characteristics on the level of knowledge regarding antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand.
3. There is a relationship between socio-demographic characteristics on the level of attitude regarding antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand.
4. There is a relationship between socio-demographic characteristics on the level of practice regarding antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand.

1.4 Research Objectives

1. To describe the socio-demographic characteristics among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand**.**
2. To assess the level of knowledge regarding antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand**.**
3. To assess the level of attitude regarding antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand**.**
4. To assess the level of practice regarding antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand**.**
5. To determine the relationship between socio-demographic characteristics, knowledge, attitude and practice regarding antibiotics use among adults in Kuanthani subdistrict, Kantang district, Trang, Thailand.

1.5 Variables in the study

1. **Independent variables**
   - **a) Socio-demographic characteristics:**

     Gender

     Age

Religion

Marital status

Education

Occupation

Monthly income

Co-morbid Disease

Current medication use within last 3 months

b) Knowledge about antibiotics

Appropriate indications of antibiotics

Antibiotics administration for children and adult

Compliance and completion of antibiotic course

Leftover antibiotics

Bacterial resistance

Antibiotics Allergy

Antibiotics Side effects

Drug interactions

Storage of antibiotics

c) Attitude regarding antibiotics use

Source of antibiotics

Appropriate Indication of antibiotics

Antibiotics administration for children and adult

Compliance and completion of antibiotic course

Antibiotics allergy

2. **Dependent variable**

a) Practice regarding antibiotics use

Appropriate Indication of antibiotics

Source of antibiotics and the method to obtain antibiotics

Antibiotics administration for children and adult

Self-medication with antibiotics

Compliance and completion of antibiotic course

Label reading of expiry date

Antibiotics sharing with others

Keeping antibiotics stock for emergency use

Side effects of antibiotics

Drug interactions

Storage of antibiotics

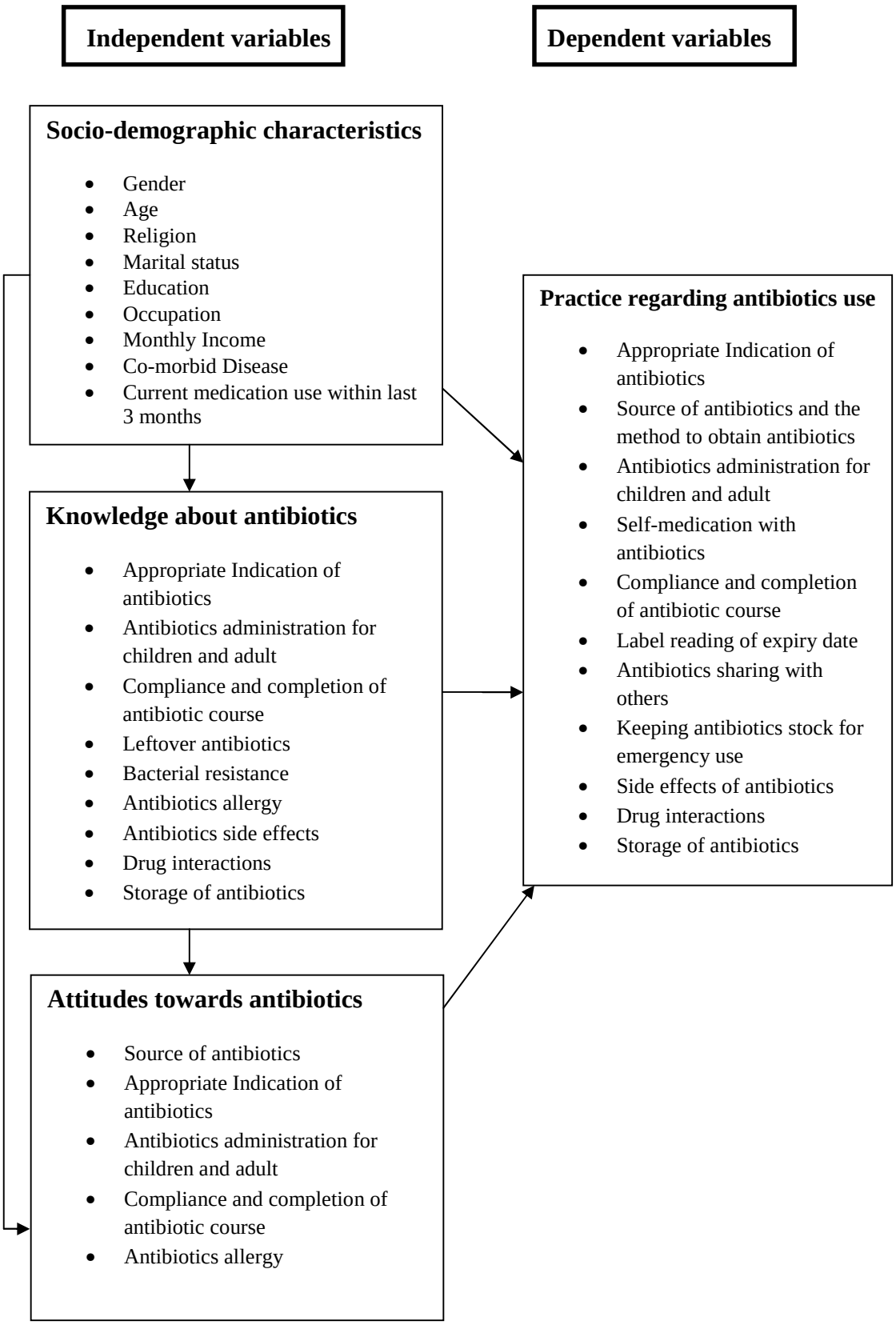

Figure 1 Conceptual framework of the study

1.6 Operational definitions

Socio-demographic characteristics including gender, age, religion, marital status, education, occupation, monthly income, co-morbid disease and current medication use within last 3 months of the study respondents.

Gender refers to the gender of the respondent, male or female.

Age refers to the age in years of the respondent at the present time. This is categorized into 5 groups; “18 – 29 years old”, “30 – 39 years old”, “40 – 49 years old”, “50 – 59 years old”, and “60 years old and over”.

Religion refers to the religion of the respondent at the present time. This is categorized into 4 groups; “Buddhism”, “Muslim”, “Christian”, and “Others”.

Marital status refers to whether an individual is legally married as per the marriage laws or customs of the country. This is categorized into 3 groups; “Single”, “Married”, and “Widowed, Separated, Divorced”.

Education refers to the highest curriculum which respondent studied and graduated. This is categorized into 7 groups; “Less than primary school”, “Primary school”, “Secondary school”, “Vocational school”, “Diploma”, “Bachelor degree”, and “Master degree and above”.

Occupation refers to the occupation the respondent do for the living. This is categorized into 7 groups as follow; “Agriculture”, “Merchant/Business owner”, “General labor”, “Government officer”, “Employee”, “Student”, and “Other”.

Monthly Income refers to the income of respondent per month. This is categorized into 6 groups; “Less than 3,000 Baht”, “3,001-7,000 Baht”, “7,001-10,000 Baht”, “10,001-20,000 Baht”, “20,001-30,000 Baht”, and “More than 30,000 Baht”.

Co-morbid Disease refers to the study participant’s underlying disease at the present time.

Current medication use within last 3 months refers to the study participant's usage of medicine within 3 months before taking survey questionnaire.

Antibiotics mean drugs that fight infections caused by bacteria. They are also known as antibacterial drugs or antimicrobial drugs. They are not effective against viral infections such as common cold, most sore throats, and the flu (U.S. FDA, 2011: online).

Knowledge of antibiotics use means knowledge and ability of the study population to describe the truth about appropriate antibiotic indications, antibiotic administration for children and adult, compliance and completion of antibiotic course, leftover antibiotics, bacterial resistance, drug allergy, side effects, drug interactions, and storage of antibiotics.

Attitude towards antibiotics use means opinions and feelings of the study population towards antibiotics on source of antibiotics, appropriate indication of antibiotics, antibiotics administration for children and adult, compliance and completion of antibiotic course, and antibiotics allergy.

Practice regarding antibiotics use means experience in rationally using or not using antibiotics of the study population in the following items; appropriate indication of antibiotics, antibiotics administration for children and adult, source of antibiotics and the method to obtain antibiotics, self-medication with antibiotics, compliance and completion of antibiotic course, label reading of expiry date, antibiotics sharing with others, keeping antibiotics stock for emergency use, side effects of antibiotics, drug interactions and storage of antibiotics.

CHAPTER II

LITERATURE REVIEW

2.1 Concepts on knowledge, attitude, and practice (KAP) study

Knowledge is justified true belief. The relevant sense of justified is the one that is expressed by means of the term evident; knowledge is evident true belief. According to this conception of knowledge, three conditions must obtain if a person knows a proposition to be true. First, the proposition is true; secondly, the person accepts it; and, finally, the proposition is one that is evident for that person (Chisholm, 1989 cited in Saleeon, 2009). Knowledge means facts, rules, structure derived from learning, experience, searching that human has gained and collected and expressed as behavior (Good, 1973 and Smith, 1997 cited in Thongkhao, 2002). It is a process in the brain related to the thought that creates learning, memory, understanding, and recognition that can be utilized in justifying facts (Bloom, 1971 cited in Thongkhao, 2002).

Attitude refers to the feeling of people towards such subject, as well as any preconceived ideas that people have towards it (Kaliyaperumal, 2004). Attitudes, which are relatively permanent and stable evaluative summaries about an item, are an important psychological construct because they have been found to influence and predict many practices (Kraus, 1995 cited in Saleeon, 2009).

Practice refers to the ways in which people demonstrate their knowledge and attitude through their actions (Kaliyaperumal, 2004).

There is association between knowledge, attitude, and practice. Knowledge is essential for understanding, convincing and enabling the practice. Proper and correct knowledge shows how to practice, and encourage real practice. Therefore, knowledge and practice have close relationship and depend on each other (Thongkhao, 2002). Knowledge alone, however, cannot confirm that individuals will practice as they

know. Therefore, attitude plays an important part in linking between the knowledge and the practice (Thongkhao, 2002).

One among popular concept used in measuring human behavior is KAP study. This kind of study measures the knowledge, attitude, and practices of a person. KAP study tells us what people know about certain things, how they feel and also how they behave. The KAP model suggested the concept that behavior is caused by interaction of three factors, i.e., knowledge, attitude, and practice, the basic concept that individual behavior is the holistic of knowledge and attitude (Thongkhao, 2002). Appropriate and accurate knowledge facilitate how to practice. Positive attitude leads to the correct practice. It serves as an educational diagnostic of the community (Kaliyaperumal, 2004).

In most KAP surveys, data are collected orally by an interviewer using a structured, standardized questionnaire. These data then can be analyzed quantitatively or qualitatively depending on the objectives and design of the study. Besides, KAP survey data are essential to help plan, implement and evaluate the particular topic (Saleeon, 2009). Additionally, KAP surveys can identify knowledge gaps, cultural beliefs, or behavioral patterns that may facilitate understanding and action, as well as pose problems. They can identify information that is commonly known and attitudes that are commonly held. Moreover, they can identify factors influencing behavior that are not known to most people, reasons for their attitudes, and how and why people practice certain health behaviors. KAP surveys may be used to identify needs, problems and barriers in program delivery, as well as solutions for improving quality and accessibility of services (WHO, 2008). Understanding the levels of knowledge, attitudes, and practice will enable a more efficient process of awareness creation as it will allow the researcher to understand more of the needs of the community (Kaliyaperumal, 2004).

The practical guidance for conducting a KAP survey by following a six step process as follow (WHO, 2008):

Step 1 Define the survey objectives: contains information about how to access existing information, determine the purpose of the survey and main areas of enquiry, and identify the survey population and sampling plan.

Step 2 Develop the survey protocol: outlines elements to include in the survey protocol and suggestions to help identify the key research questions. Determining whether the survey needs ethical review is critical to this step, as well as creating a work plan and budget.

Step 3 Design the survey questionnaire: proposes important steps for developing, pre-testing and finalizing the questionnaire, and for making a data analysis plan.

Step 4 Implement the KAP survey: includes considerations for choosing survey dates, recruiting and training survey supervisors and interviewers, and managing survey implementation.

Step 5 Analyze the data: consists of entering and checking the quality of the survey data, and implementing the data analysis plan created in Step 3.

Step 6 Use the data: highlights ideas on how to translate the survey findings into action, elements to include in the study report, and how to disseminate the survey findings.

2.2 Knowledge, attitude, practice researches involved in this study regarding antibiotics

The right antibiotics, given at the right time and in the correct dose, can cure infections and save lives (Dancer, 2008). But even an appropriate antibiotic may do more harm than good, if it is given too short a time, or in too low a dose (Dancer, 2008). These may be due to resistant bacteria that overgrow in response to an incomplete course of antibiotics, or the original pathogen was not eradicated and continues to cause a problem. It is even possible that the original pathogen actually becomes more virulent following exposure to antibiotics (Dancer, 2008).

Antibiotic resistance refers to a situation in which the drugs that usually destroy the bacteria no longer do so. It implies that people can no longer be effectively treated against the bacteria. Consequently, they are ill for longer periods of time, and they face a greater risk of death. Furthermore, diseases are prolonged, putting more people at a risk of becoming infected or death (Zhang, 2008).

Antibiotic resistance is strongly associated with improper usage of antibiotics (You et al., 2008; Oh et al., 2011). There is evidence that the wrong antibiotics will enhance and even accelerate virulence of potential bacteria, including organisms that are generally regarded as only normal flora (Dancer, 2008). Rational antibiotic use is essential for preserving their clinical effectiveness, while the reduction of unnecessary use will decrease antibiotic resistance (You et al., 2008). Antibiotic resistance is an extremely expensive problem. Its costs in the US alone are estimated at US $5-$24 billion per year (Zhang, 2008). In some countries, the use of antibiotics without a prescription is encouraged by the lack of laws restricting antibiotic sales or a failure to enforce those laws (Mainous, Diaz and Carnemolla, 2008).

2.2.1 The studies in the United States of America

The study of knowledge, attitudes, and experiences of antibiotic use by adults and parents of children less than 5 years old in Wisconsin and Minnesota, the United States of America by Belongia et al., 2002 reported that public expectations for antibiotics contribute to inappropriate use and patients often have misconceptions regarding antibiotic use, and most expect to receive an antibiotic for viral respiratory illness. Parents with below-median knowledge scores were more likely to expect antibiotics during a doctor visit for their child’s illness. Questions regarding attitudes and beliefs indicated that many respondents believed that they knew when an antibiotic was needed for themselves before they went to see doctor. Few respondents expected to ask for an antibiotic or seek care from another physician if they did not receive an antibiotic for upper respiratory illness. Twenty-five adults (28%) and 22 parents (15%) asked the physician to prescribe antibiotics (Belongia et al., 2002).

The study of consumer attitudes and use of antibiotics in the United States of America (Connecticut, Minnesota, Oregon, California, Georgia, Maryland, and New York) by Vanden Eng et al., 2003 found that demand for antibiotics can be affected by consumer's knowledge, attitudes, and practices. The sample included in this study were 12,755 respondents, 27% believed that taking antibiotics when they had a cold made them better more quickly, 32% believed that taking antibiotics when they had a cold prevented more serious illness, 58% of respondents were not aware of health dangers associated with taking antibiotics and 48% of respondent expected antibiotic prescription when they had a cold (Vanden Eng et al., 2003).

These issues of non-prescription antibiotics are particularly problematic in Latin America (Mainous, Diaz and Carnemolla, 2008). In Latin America, antibiotics are easily obtained over the counter (Cespedes and Larson, 2006; Mainous, Diaz and Carnemolla, 2008).

The study of Latino's knowledge, attitudes, and practices regarding antibiotic use in the United States of America by Cespedes and Larson, 2006 found that many Latinos in the United States self-prescribe antibiotics because of financial and sociocultural barriers and inaccurately believe that antibiotics help treat viral infections.

Another study on antibiotics use in Latinos, conducted by Mainous, Diaz and Carnemolla, 2008 found that study participants believed that physician visits for a diagnosis and prescription were unnecessary when the patient was familiar with the symptom and it had previously responded to antibiotic treatment. Moreover, many participants suggested self-medicating with antibiotics was preferable to going to the doctor (Mainous, Diaz and Carnemolla, 2008).

Pylypa, 2001 as cited in Landers et al., 2010 describes self-medication with antibiotics in Mexican women as a function of symptom-based "comparative reasoning" in which patients compare their current health relative to their personal and familial experiences as a basis for choosing treatment. Thus, patients may choose

to obtain and use an antibiotic based on their prior experience with similar symptoms or for similar severity of illness.

2.2.2 The studies in Europe

The study of rational antibiotic use by university staffs in Turkey by Buke et al., 2003 reported that 45.8% (n=1,380) of the samples self-medicate with antibiotics. Some of them (15.6%) used antibiotics just until their symptoms disappeared regardless of the prescription period. About 5.8% of respondents in Group A (staffs from the faculty of dentistry and pharmacy) and 3.9% of respondents in Group B (staffs from faculty of education, science, and so on) admitted that they occasionally used antibiotics for prophylaxis. About 32.2% of the respondents would start treatment using any antibiotics they found at home in order not to waste time. Only 79% of all respondents used the antibiotics on prescription and 15.8% admitted that they used an antibiotic previously stocked in their home without consulting a doctor.

The study of self-medication with antibiotics in general population of Sweden by Svensson, Haaijer-ruskamp and Lundborg, 2004 found that of the 700 participants, 17% had used antibiotics within the last year. Among antibiotics users, all reported that they had been obtained the medicine from prescription, except three cases. In those three cases antibiotics were leftover from previous treatment or given by a friend or relatives. Also, 4% said that right now they had at least one kind of antibiotics at home. Eleven per cent said that they would like to self-medicate with antibiotics if possible. Cystitis is the most common reason given for using antibiotics and for possible self-medication. Finally, penicillin V was the most frequently mentioned antibiotics. This study concluded that population in this area of Sweden in general only used antibiotics after doctor consultation.

The study of antibiotic self-medication in general population of Slovakia by Cizman, Haaijer-ruskamp and Grigoryan, 2005 found out that self-medication with antibiotics does occur in Slovenian adults aged 18 and above. Among 1,143 participants, 87% of antibiotics were obtained from doctor prescription, 3.2% were

leftover, and 0.9% were obtained from friends. Home antibiotic storage was reported by 19.5% of respondents. Intended self- medication for using antibiotics without previous consultation with a physician was definite in 9.5%, and 16.7% of respondent said they maybe probably self-medicate before doctor visit.

The study of self-medication with antibiotics in Greece by Skliros et al., 2010 found that among 1,139 general adults who visited the rural health centers in southern Greece participated in the study, 508 individuals (44.6%) reported that had received antibiotics without medical prescription at least one time in the past 12 months. The major source of antibiotics was the pharmacy without prescription (76.2%) followed by leftover at home from previous prescription (15.3%) and drugs obtained from friends/relatives (7.2%). The most frequently used antibiotics for self-medication was Amoxicillin (18.3%) followed by Amoxicillin/Clavulanate (15.4%) and Cefaclor (9.7%). Fever (41.2%), common cold (32%) and sore throat (20.6%) were the most frequent indications for their usage. In addition, 31.5% of the participants reported earlier cessation of antibiotics when symptoms subside.

2.2.3 The studies in Middle East

The study of knowledge, attitudes, and behavior regarding antibiotic use among community adults in Jordan by Shehadeh et al., 2011 described that in Jordan, patients visit a community pharmacy to purchase a pharmaceutical product much like they go to shopping at supermarket. From a random sample of 1,141 adult Jordanians, 67.1% believed that antibiotics treat common cold and cough, 28.1% misused antibiotics as analgesics, 28.5% kept antibiotics at home for emergency use, 55.6% use antibiotics as prophylaxis against infections, 49% use leftover antibiotics without physician’s consultation while 51.8% use antibiotics based on a relative advice. Moreover, 11.9% of females showed incorrect knowledge about safe use of antibiotics during pregnancy and breastfeeding.

2.2.4 The studies in Asia

The review of inappropriate use of antibiotics in the Philippines by Dy, 1997 demonstrated the situation of which antibiotics were accounted for 15-30% of local drug expenditures, the largest of any therapeutic drug categories. The problem of antibiotic resistance in the Philippines caused by multiple factors such as over-the-counter sale, self-medication, poor patient compliance, poor quality of drugs, and unavailability of laboratory facilities. Also there was as much underuse as there was overuse, because the median number of antibiotics units dispensed on a single visit at drug store was 6 capsules. Moreover, 66.3% of community purchases were made without prescription. People citing financial constraint as the main reason for noncompliance with the prescribed regimen, and the lack of patient awareness that the medication should be completed whether the symptoms were subside or not.

The study of antibiotic knowledge and use in upper respiratory tract infection (URTI) in Singapore by Tan et al., 2006 found that although 51.3% of respondents (n=595) had completed more than six formal years of education, only 7.9% of them knew that URTI was caused by viruses and 11.2% knew it was caused by some kind of germs. Only 36.3% of respondents believed that URTI resolved on its own. For all URTI episodes in the past, 57.8% said that their symptoms improved faster when antibiotics were used. Thirty-one percent of respondents used previously prescribed medication just prior to doctor visit, of this, 21.5% used leftover antibiotics.

The study of public knowledge, attitude, and behavior on antibiotic use in Hong Kong by You et al., 2008 found out that 26% of study participants age 18 years old and over (n=1,002) believed that antibiotics was needed for symptoms of common cold. Eight percent of the participants would share antibiotics with family members. Nine percent of the participants had acquired antibiotics without a prescription. On the other hand, a total of 77%, 72% and 85% of the study participants had adequate knowledge, appropriate attitude and good practice on antibiotics, respectively. Seventy-eight percent of the study participants had complete the antibiotic course during the most recent episode treatment. A majority of participants (65%) also

agreed that the effective of treatment would be reduced if the full course of antibiotics treatment was not completed (You et al., 2008).

The study in China by Jin et al., 2011 said that antibiotics are the most commonly prescribed drugs in China, accounting for 30-50% of all drug consumption. Antibiotic resistance is a very serious problem in China, and since 2004 antibiotics cannot be sold without a prescription, but the enforcement of this law is incomplete. The majority of the village doctors in China are bare foot doctors with no formal education but usually with a very long experience and high reputation. The knowledge about antibiotics among villagers was usually based on their own experience. They are particularly keen on intravenous infusions, which they actively requested, also for common colds. Children were very often given intravenous antibiotics as fast as possible. The price of the drug was perceived as a kind of quality control; therefore, “good”, expensive antibiotics were requested. Villagers reported that they could buy antibiotics at any time at the village clinic and were surprised to find they were now prescription-only drugs. There was a widespread and strong belief that there always has a never ending line of new antibiotics and that there would always be another antibiotic to overcome the problem with resistance (Jin et al., 2011).

The study of public knowledge and attitudes regarding antibiotic use in South Korea by Kim et al., 2011 highlight some misconceptions in general public (n=1,500) that only 30.1% of respondents correctly answered questions about using antibiotics to treat cough and colds. Thirty-one percent of the respondents correctly answered that antibiotics cannot kill virus. Over half (57.2%) did not know that antibiotics can kill bacteria that are normally live in the body. Thirty percent of respondents said that they had requested antibiotics for treating a cold and 48.2% believed that antibiotics help them recover from the cold more quickly, 46.9% said that they had taken unconsumed antibiotics from previously prescription without first consulting a doctor, and 77.6% of respondents stopped taking their medication when they felt better.

The study of self-medication with antibiotics in Indonesia by Widayati et al., 2011 described that 7.3% of 559 randomly selected adults self-medicated with

antibiotics in the last month. Amoxicillin was the most popular (77%) antibiotic for self-medication besides ampicillin, gramisidin, tetracycline, and ciprofloxacin to treat the symptoms of common cold including cough and sore throat, headache and other minor symptoms. The length of antibiotic use was mostly less than five days. Doctors or pharmacists were the most common source of knowledge and information about antibiotics for self-prescription. The previous prescription recall was the main reason citing for non-prescription usage. Antibiotics were commonly purchased at pharmacies and the cost of single purchase was usually less than 1 USD.

The study of public knowledge and attitudes towards antibiotic usage in Malaysia by Oh et al., 2011 reported that age, race, and educational level were among the demographic characteristics significantly associated with knowledge and attitudes toward antibiotic use. Nearly 55% of the respondents (n=420) had a moderate level of knowledge. Three quarters (76.7%) of the respondents could correctly identify that antibiotics are indicated for the treatment of bacterial infections. However, 67.2% incorrectly thought that antibiotics are also indicated to treat viral infections. With regard to attitudes, 38% believed that taking antibiotics when they have cold symptoms could help recovery faster, while 47.3% expected antibiotics to be prescribed for common cold symptoms. More than one-third of the respondents incorrectly self-medicate themselves with antibiotics once they have a cold (Oh et al., 2011)

The qualitative study in Vietnam about drug use and self-medication among children with respiratory illness and diarrhea by Hoan et al., 2011 described the misconception and misuse of drugs resulted from in-depth interview and focus group discussions with doctors, drug sellers, and mothers who had children less than 5 years old. Drugs commonly used in respiratory illnesses were various combinations of antibiotics, antipyretics, cough and cold preparations, vitamins, anti-asthmatic drug, and corticosteroids. Mothers give the drugs to their child for only 1-2 days, and if the child was not better they want to change to another drug. Compliance to the dose prescribed was poor. Some mothers said that they tended to increase the dose themselves so that their child would recover quicker; in contrast, other mothers

reported that they tended to decrease the dose because they were concerned about harmful effects on the child. Regarding efficacy of drugs, mothers tended to believe that high price and foreign brands implied that a drug was “strong”, whereas low price and domestic drugs are “weak” drugs. Some of them thought that drugs provided by hospitals or health centers were “weak”, if they want a “strong” drug they would buy at private pharmacies or private clinics. Most mothers thought that injections were “strong” and if a child receive “strong” drug they would recover faster. There are several reasons why mothers prefer self-medication for their children, which include perceptions of the illness as mild symptoms, time saving and convenience, bad attitudes with medical staffs, and insufficient drug supplies at community health centers.

2.2.5 The studies in Thailand

The study of antibiotic use in Northeastern Thai women by Chanthapasa, 1997 found that women were concerned about their uterus problems and used antibiotics as self-medication because of many reasons such as perceived efficacy of antibiotics in treating “Mot-luuk Akseep”, imitating the prescription of health personnel, lack of access to health services and feeling ashamed of gynecological examination. For pattern of antibiotic use, it is found that buying 1-2 capsules per purchase is the most common pattern. It is concluded that antibiotic use for self-medication was determined by social and cultural factors. Women sought self-medication without knowledge about the type of antibiotics, indication, and side effects (Chanthapasa, 1997).

Another similar study in Northeastern Thailand by Boomongkon et al., 1999 found that women strongly concern about chronic and recurrent uterus-related problems. They described the symptoms from abdominal and lower back pain to vaginal discharge, itching, odor and rash. They fear that these problems indicate uterus inflammation and finally lead to cervical cancer. Eighty percent of women surveyed (n=1,028) reported self-medication with antibiotics, specifically under-

dosages of two brand names of tetracycline, “Gano” and “Heromycin” which is medically inappropriate for most of the symptoms that women classify as inflammatory uterus (Boomongkon et al., 1999 cited in Hardon and Hodgkin, 2004).

The study of antibiotics use behaviors of people ages 16 years and over in Nakornpathom province by Sirirassamee, 1997 indicated that the majority of respondents have relatively fair or poor knowledge of antibiotics. The respondents have poor knowledge on toxic of antibiotics, the interval between taking antibiotics and meals, drug resistance and antibiotics for children. The majority have fair or poor performance on antibiotics use. The behaviors which researcher found to be inappropriate antibiotics uses such as using antibiotics without indication, buying antibiotics from grocery in the village, incorrect use of antibiotics for children, too short interval between taking antibiotics and meals, incomplete dose of antibiotics, no observation of drug expiration date and incorrect practices in reaction to side effects of antibiotics (Sirirassamee, 1997).

The study of community drug use patterns in Thailand by Chuengsatiansup et al., 2000 indicated that antibiotics are among those critical drug problems in Thai communities besides assorted or combination of tablets (Ya chud), steroids, NSAIDs, and painkillers. More than one third of drug expenditure in Thailand was spent on purchasing drugs for self-medication. It is evident that most studies find self-medication practices problematic because they do not comply with professional standards. Problematic practices in self-medication include choosing drugs by brand names; using past experience in determining which drug to use; believing in suggestions made by friends, neighbors, or commercial advertisement; experimenting with new drugs; having insufficient knowledge about drugs; paying little attention to drug labels; adapting drug doses and using wrong dosage forms. Modern pharmaceuticals are perceived as “strong”, more efficient, and give quick effect especially for acute illnesses. Among modern pharmaceuticals, injection dosage forms are thought to be the most effective form of treatment. People also perceive that expensive drugs are more effective than cheap ones, prefer more brand name drugs than local generics, and receiving more drugs is better than less. Moreover,

inappropriate use such as purchasing drugs by comparing shape and color, using leftover drugs, using drugs from other people who suffered from similar symptoms, and obtaining drugs without adequate medical information. The most common practices in acquiring drugs from drug stores or small groceries are by telling the names or brand names of wanted drugs to the shopkeepers, describing symptoms of illnesses to the shopkeepers, and bringing in samples of the wanted drugs (Chuengsatiansup et al., 2000).

The current situation about antibiotics profile in Thailand is similar to worldwide study. The report of “Antibiotic Smart Use” project by Sumpradit, 2010 indicated that since the year 2000, Thailand national antibiotics production and drug import is highest among other drug groups. In 2007, national antibiotics production and imports are worth about two billion baht, which is approximately 20% of all national drug expenditure. Thailand’s leading medical schools have 25 – 91% of irrational antibiotics prescription among practitioners. Also, people usually buy antibiotics to treat themselves in viral infections such as upper respiratory tract infections more than 70 – 80% in Bangkok and 40 – 60% in another part of Thailand. Hence, antibiotics are drugs that have highest national reports of adverse drug events, about 54% of all adverse drug reactions found in Thailand (Sumpradit, 2010). The Thai Food and Drug Administration, Ministry of Public Health started to launch educational and interventional program “Antibiotic Smart Use” project. Antibiotic Smart Use project aims to educate practitioners and consumers how to use antibiotics wisely in 3 common target diseases that both prescribers and consumers use antibiotics inappropriately; common cold (upper respiratory tract infections), acute diarrhea, and simple wounds (Thai FDA, 2008: online).

2.3 Problems and incidence of irrational drug use

Rational use of drugs means using drugs which are safe and effective. These drugs should be available at reasonable prices and could be stored conveniently. The drug should be the appropriate drug for the disease, correctly diagnosed, should be

administered at the right dose for the right length of time (Chaudhury and Tripathi, 1997).

The problem of irrational use of drugs is common. The reasons could be (Chaudhury and Tripathi, 1997). 1) Availability of unnecessary drugs. 2) Lack of knowledge about the pharmacology of drugs. 3) Deficient diagnostic facilities. 4) Drug promotional activities of pharmaceutical companies. 5) Sociocultural factors – perception, habits and tradition. 6) Priorities and resources of health care structures. 7) Non-compliance to drug treatment.

Hardon and Hodgkin, 2004 describe common patterns of inappropriate medicines use in community. First of all, people are not using the medicine in the way intended by the prescriber. Because people tend to forget the details of the advice given, or fail to purchase all the drugs that are prescribed, because they do not have money to buy. They sometimes stop taking the prescribed drugs or take the wrong dosage.

Secondly, people self-medicate themselves with prescription drugs. In many countries people can purchase drugs over-the-counter that legally should only be sold on prescription. In the Philippines, people keep copies of doctor prescriptions to re-use because doctor's consultation is expensive and repeated use of prescription is a way to save money (Hardon, 1991 as cited in Hardon and Hodgkin, 2004). Self-medication with prescription drugs is especially a problem in developing countries where drug stores freely supply medicines over-the-counter, as do informal drug shops and small groceries. People keep stocks of leftover medicines in their homes, and re-use them or give them to neighbors or relatives who request when they encounter similar symptoms (Hardon and Hodgkin, 2004).

Third is the misuse of antibiotics. Antibiotics are important drug, but sometimes over-prescribed and overused in self-medication for the treatment of minor self-limiting diseases such as simple diarrhea, coughs and common cold. People have great expectations for antibiotics; they are supposed to cure almost any illnesses. When antibiotics are used too often in suboptimal dosages, bacteria become resistant

to them which public health seriously concern. People buy suboptimum antibiotics dose, sometimes two or three capsules, because they cannot afford the full course prescribed, or because they are not aware of the need to complete antibiotic courses. In the Philippines, the median number of antibiotics dispensed in a single drugstore visit was six tablets (Lansang et al, 1991 cited in Hardon and Hodgkin, 2004). Even in industrialized countries where antibiotic dispensing is better regulated, noncompliance with the prescribed regimen is a common problem. Vaananen, Pietila, and Airaksinen, 2006 found that unnecessary and irrational self-medication with antibiotics seems to be common in southern Spain. Of the antibiotic users, 41% had bought their antibiotics without a prescription. The lack of time and the patients' high expectations of having antibiotics often push general practitioner to prescribing, despite a clear indication (Vaananen, Pietila and Airaksinen, 2006). The study in Spain by Llor, 2010 found out that when in doubt, the family doctor tends to prescribe antibiotics on most respiratory infections. In addition, patient expectations are often based on false assumptions or experiences from previous doctor visits (Llor, 2010). People who have not understood the need to complete the course stop using antibiotics when the symptoms disappear, while others take an overdose as they think that this will lead to faster symptom recovery.

Moreover, the overuse of injections is one of the common patterns of inappropriate medicine use. Health workers and patients in many countries believe that injections are more effective than tablets. This not only leads to unnecessary expenditure because in many cases tablets are cheaper than injections, it also leads to unnecessary health risks when the injections are administered in unhygienic place or syringes and needles are reused without sterilized (Hardon and Hodgkin, 2004).

2.4 Self-medication

Self-medication is a common practice in many developing countries due to quality concerns related to healthcare delivery systems as well as skepticism about the benefits of professional healthcare versus traditional medicine (Pagan et al., 2006).

Only about 10-15% of illness episodes actually result in contact with professional health care providers, and a large proportion of those who seek medical care have treated themselves before seeking professional advice (Sleath et al., 2001).

The World Health Organization (1983) defines self-care in health as "the activities individuals, families and communities undertake with the intention of enhancing health, preventing disease, limiting illness, and restoring health. These activities are derived from knowledge and skills from the pool of both professional and lay experience. They are undertaken by lay people on their own behalf, either separately or in participative collaboration with professionals" (Sleath et al., 2001).

Use of over-the-counter medication is one of the self-care activities most often undertaken by patients. Taking nonprescription medicine is the initial response in almost half of all illness episodes, particularly for symptoms viewed as non-serious (Sleath et al., 2001). Self-medication is increasingly important internationally as more medications become available over-the-counter. It is often more convenient for patients to buy over-the-counter medications when they are not feeling well instead of taking time to see a physician. One important reason why patients did not fill the prescriptions that they obtained from their physicians was because the same medications were available over the counter. It is often cheaper for patients to buy medicines over-the-counter than to have a prescription filled (Sleath et al., 2001).

More than 175 million adults in the United States consume over-the-counter medications daily. Of these, approximately 14% take OTC medications several times a week (Ajuoga et al., 2008). OTC medications are perceived to be safe by the public and used for self-care for immediate symptomatic relief of minor health ailments (Ajuoga et al., 2008). Potential benefits of these products include lower cost, convenience, and to be in charge of one's own health (Ajuoga et al., 2008). OTC medications, like other pharmaceuticals, however, have potential risks, such as misuse, abuse, and adverse effects (Ajuoga et al., 2008). Indermitte et al. (2007) and Ngo et al. (2010) as cited in Hanna and Hughes (2011) found that consumers typically had a lack of awareness of potential drug interactions with self-medication. Patients and the public may be influenced by information received from friends and family and

may act on such information in terms of medicine selection (Hanna and Hughes, 2011). They may also have perceptions that OTC medicines are safe and ‘too weak to cause any real harm’ (Hanna and Hughes, 2011).

Self-medication is in fact a universal phenomenon and the most popular form of symptom management in most societies (Chuengsatiansup et al., 2000). But this practice can lead to inappropriate medicine use especially antibiotics self-medication. People usually buy medications from grocery or taking leftover medications from friends and relatives. They receive wrong source of medicine information and antibiotics are perceived as the best medications for almost every illnesses.

In conclusion from researches and studies abovementioned, antibiotics are among the most commonly purchased drugs worldwide, many of them are sold without prescription or professional consultation (Morgan et al., 2011). Non-prescription use and self-medication were common for non-bacterial disease. Safety issues associated with non-prescription use included adverse drug reactions and masking of underlying infectious process (Morgan et al., 2011).

CHAPTER III

RESEARCH METHODOLOGY

The concepts, theories, and review of literature as in Chapter I and Chapter II were used as the guidelines for research study protocol.

3.1 Research Design

The study of knowledge, attitude, and practice regarding antibiotic use among adults in Kuanthani Subdistrict, Kantang District, Trang Province, Thailand was a cross sectional descriptive study.

3.2 Study Area

The study carried out at Kuanthani Subdistrict, Kantang District, Trang Province, Thailand.

3.3 Sample Population

Adult population living in Kuanthani Subdistrict, Kantang District, Trang Province, Thailand were taken as the sample of this study.

Inclusion criteria

- Adult age 18 years old and above
- People who were living in Kuanthani Subdistrict, Kantang District, Trang Province, Thailand for more than 6 months
- People who could listen, speak, read, and write in Thai language
- People who were willing to participate in the study

Exclusion criteria

- People who were working as health professionals
- People who could not listen, speak, read, and write in Thai language

- People who were incapable of responding to survey questions because of psychiatric or neurological disorders
- People who were not willing to participate in the study
- People who were not available at the time when researcher visit their household
- People who were temporary in the city for vacation

3.4 Sample size calculation

The total number of 3,639 adults age 18 years old and over living in Kuanthani Subdistrict as of year 2012 (Kuanthani Tambon Health Promoting Hospital, interview, 2012).

The samples were specified to obtain suitable sample size, using Yamane formula to arrive at the required quantity as the sample size is known.

Yamane (1967:886) provides a formula to calculate sample size

$$n = \frac{N}{1 + N(e)^2}$$

Where, n = The estimate sample size

N = The population size

e = The level of precision required, the value of 5% is selected

$$n = \frac{3,639}{1 + 3,639(0.05)^2}$$

$$= 360$$

Extra 10% calculation which is 36 was taken to supplement the missing data (allowed for 10% non-response rate). Therefore, the total sample size was 396 people.

3.5 Sampling Technique

Kuanthani Subdistrict consisted of six villages; Ban Kho Yao, Ban Kuanthani, Ban Bo La On, Ban Na Nai, Ban Bin Yee, and Ban Bang Mak Noi. A total number of adults age 18 years old and over were 3,639 people in 825 households.

Participants were selected by systematic random sampling method and proportional to size. The number of residents in each villages and the total number of adults which was 18 years old and over were obtained from the interview by researcher with a registered nurse and assistant working in Kuanthani Tambon Health Promoting Hospital.

Table 1: Number of residents in each village of Kuanthani subdistrict, Kantang district, Trang province.

Villages of Kuanthani Subdistrict	**Number of residents in each village**	**Sample size**
Village 1 Ban Kho Yao	651	71
Village 2 Ban Kuanthani	1,350	147
Village 3 Ban Bo La On	243	26
Village 4 Ban Na Nai	355	39
Village 5 Ban Bin Yee	472	51
Village 6 Ban Bang Mak Noi	568	62
Total	3,639	396

Sampling was conducted by the steps listed below:

1. Create a list of households in six villages. List of all names of population reside in each village and household number was obtained from Kuanthani Tambon Health Promoting Hospital, Kuanthani Tambon Administration Organization and village health volunteers.
2. The researcher randomly selected household in each village by starting at the first household and skip across to household number 1, 3, 5, 7… and so on.
3. Each household the researcher chose one respondent who represent to be fit the inclusion criteria to do the questionnaire. If there were more than one person who are eligible for the study, the researcher was randomly select only one person in each household.
4. Repeat the process until the target number of participants was achieved.
5. Household with no residents or eligible residents at the time of visits was skipped.

3.6 Measurement Tool Development

Self-administered structured questionnaire was used for this study. The questionnaire was developed with the help of literature review on how to conduct KAP survey (Kaliyaperumal, 2004; WHO, 2008), worldwide studies regarding antibiotics (Buke et al., 2003; Vanden Eng et al.,2003; Hsiao et al., 2006; Darmanin Ellul et al., 2008; You et al., 2008; Panagakou et al., 2009; Leochico et al., 2010; Oh et al., 2011; Panagakou et al., 2011; Rousounidis et al., 2011; Shehadeh et al., 2011), and similar studies regarding antibiotics in Thailand (Kuntee, 1995; Sirirassamee, 1997; Na Nakorn, 2002; Suwan, 2006; Suksomsin, 2008; Kaenjan, 2008; Kaewmang, 2010). The questionnaire items were modified to suit the local population.

3.6.1 Content validity of the questionnaire

The questionnaire items were internally reviewed for content validity by three experts, two experts are in the field of pharmaceutical sciences and one expert is in the field of epidemiology and public health. The first expert is Associate Professor Dr. Sanguan Lerkiatbundit from Department of Pharmacy Administration, Faculty of

Pharmaceutical Sciences, Prince of Songkla University, Thailand. The second expert is Dr. Surasak Soonthorn from Department of Technical Pharmacy, Sirindhorn College of Public Health Suphanburi, Thailand. And the third expert is Dr. Archin Songthap from Department of Research and Innovation, Sirindhorn College of Public Health Trang, Thailand. The research proposal and questionnaire were sent to three experts to read and review for content validity. All experts were read and gave feedback. Modifications of questionnaire items were made based on expert feedback and recommendations.

3.6.2 The pre-test of the questionnaire

The questionnaires had been pretested with 33 eligible adults aged 18 years and over with approximately the same level of socio-demographic characteristics of the study participants. The pretest subjects were living in Kuan Pring Subdistrict, Muang District, Trang Province. Minor changes and improvement in questionnaire items were made following this pilot test. The detailed pre-test results were demonstrated in Appendix E.

The Kuder-Richardson 20 formula was used to calculate the reliability score in the knowledge part, because of the dichotomous choices. Knowledge part contained 16 items. The KR-20 score for 16 items was 0.881, which was appropriate.

The Cronbach's alpha formula was used to calculate the reliability score in the attitude part. First of all, attitude part contained 18 items and the Cronbach's alpha was 0.583 for 18 items, which was not appropriate. The appropriate reliability score should be equal to or more than 0.70 in each part. The researcher found out that deleting attitude item 3, 4, and 10 would arrive at desirable reliability score. Therefore, the new calculation of attitude reliability score was 0.707 for 15 items, which was suitable.

The Cronbach's alpha formula was used to calculate the reliability score in the practice part. Practice part contained 27 items and the Cronbach's alpha for 27 items was 0.721, which was appropriate.

3.6.3 The questionnaire parts and items

The questionnaire was composed of four parts with most of the questions were close-ended (Appendix A: questionnaire in Thai language, Appendix B: questionnaire in English language). The first part of the questionnaire contained nine questions about general information on the socio-demographic characteristics of the study participants, including gender, age, marital status, education, occupation, monthly income, co-morbid disease and current medicine use within last 3 months.

The second part of the questionnaire contained 16 questions on knowledge regarding antibiotics such as appropriate antibiotic indications (item 1-6), antibiotic administration for children and adult (item 9), compliance and completion of antibiotic course (item 7), leftover antibiotics (item 8), bacterial resistance (item 12-13), antibiotic side effects (item 10), antibiotic allergy (item 11), drug interactions (item 14) and storage of antibiotics (item 15-16).

The third part of the questionnaire contained 15 questions about attitude regarding antibiotics use such as source of antibiotics (item 1-2), appropriate indication of antibiotics (item 4, 6, 7, 14), antibiotics administration for children and adult (item 3, 8, 10), compliance and completion of antibiotic course (item 5, 9, 11, 12, 13), and antibiotics allergy (item 15). A five-point Likert scale ranging (‘strongly agree’, ‘agree’, ‘neutral’, ‘disagree’, and ‘strongly disagree’) was used to assess the response of the study participants. To simplify the analysis, researcher had grouped and classified those who answer “Strongly agree” and “Agree” as having agreed and those who answer “Strongly disagree” and “Disagree” as having disagreed.

The fourth part of the questionnaire contained 27 questions about practice regarding antibiotics use such as appropriate indication of antibiotics (item 1, 5), antibiotics administration for children and adult (item 20, 22, 23), source of antibiotics and the method to obtain antibiotics (item 2-4), self-medication with antibiotics (item 6-9), compliance and completion of antibiotic course, (item 16-18), label reading of expiry date (item 10-13), antibiotics sharing with others (item 15),

keeping antibiotics stock for emergency use (item 21), side effects of antibiotics (item 24), drug interactions (item 14) and storage of antibiotics (item 19, 25, 27)

3.7 Data Collection

Data collection was conducted in March 2013. Before data collection started, researcher planned the data collection steps and discussed with two research assistants about the research objectives, the questionnaire items, and how to collect data from the study participants. Data for this study were collected using anonymous self-administered questionnaires in Thai language. Researcher and two well-trained research assistants were distribute the questionnaires to the study participants and ask them to fill in all the necessary information and answer all the questions provided. Researcher and each research assistant introduce ourselves to the study subjects, give a brief review of the study and ask for them to sign informed consent before conducting the data collection. The study participants were completely explained and assured of their confidentiality and privacy. If the study participants have problem with the eyesight and cannot read properly (such as the elderly), researcher can help them by reading the questionnaire items and fill in the questionnaire for them. Once done, the researcher collected and compiled the answered questionnaires. The process of data collection was repeated until the target number of participants is achieved. The completed questionnaire responses were coded and entered for analysis accordingly.

3.8 Data Analysis

The data analysis was obtained by SPSS program version 17 (licensed for Chulalongkorn University).

3.8.1 The analysis of socio-demographic characteristics

Descriptive statistics of study participants' socio-demographic characteristics, such as gender, age, religion, marital status, educational level, occupation, monthly

income, co-morbid diseases, and current medication use within last 3 months, was reported. Numerical data was expressed as mean ± standard deviation and percentage as appropriate.

3.8.2 The analysis of knowledge regarding antibiotics

The test for knowledge about antibiotics carried sixteen questions. The right answer got 1 point and wrong answer or 'do not know' answer got zero point. The reverse score (right answer or 'do not know' answer got 0 point, wrong answer got 1 point) were calculated for item 2, 3, 4, 5, 6, and 8, which were the wrong knowledge regarding antibiotics.

Right : 1 point

Wrong/Do not know : 0 point

Possible scores ranged between 0-16 points. Maximum obtainable score was 16 points for this part. The obtained knowledge score was expressed in mean ± standard deviation and percentage.

The knowledge score was classified into 3 categorical levels using classification from relevant KAP study in antibiotics use (Sirirassamee, 1997; Shehadeh et al., 2011).

The knowledge score that was below 50% correct response was classified as "Low knowledge level" group.

The knowledge score that was between 50-70% correct response was classified as "Moderate knowledge level" group.

The knowledge score that was above 70% correct response was classified as "High knowledge level" group.

3.8.3 The analysis of attitudes towards antibiotics use

The test on attitude towards antibiotics use was in 5-point Likert scale which composed of fifteen questions and scoring criteria was as follows:

Strongly agree : 5 points

Agree : 4 points

Neutral/Unsure : 3 points

Disagree : 2 points

Strongly disagree : 1 point

And reverse score marking was done for negative statement (item 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, and 15). Attitude answers were grouped into three categories. “Strongly agree” and “Agree” answers were grouped as “Agree” answer. “Strongly disagree” and “Disagree” were grouped as “Disagree” answer. And the last group was “Neutral/Unsure” answer group. The obtained average attitude score was expressed in mean $\pm$ standard deviation and percentage.

Attitude levels were categorized into 3 levels using mean score of respondents to determine.

“Poor” attitude level was less than mean minus standard deviation.

“Moderate” attitude level was equal mean $\pm$ standard deviation.

Good” attitude level was higher than mean plus standard deviation.

3.8.4 The analysis of practices regarding antibiotics use

The test on practices regarding antibiotics use consisted of 27 questions and the answers have 3 levels: “Always/Usually” mean that the study participant practice more than half of their time. “Occasionally” mean that the study participant practice

one-third to half of their time. And “Rarely/Never” mean that the study participant practice less than one-third of their time. And vice versa marking was used for negative statement.

Always/Usually : 3 points

Occasionally : 2 points

Rarely/Never : 1 point

And reverse score marking was done for negative statement (item 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 20, 21, 22, 25, 26 and 27). The obtained average practice score was expressed in mean $\pm$ standard deviation and percentage.

Practice levels were categorized into 3 levels using mean score of respondents to determine.

“Poor” practice level was less than mean minus standard deviation.

“Moderate” practice level was equal mean $\pm$ standard deviation.

“Good” practice level was higher than mean plus standard deviation.

3.8.5 The analysis of associations among variables

Appropriate descriptive and inferential statistics were used for data analysis upon the distribution of the data collected. The test for associations between socio-demographic characteristics and knowledge, attitude, and practice was achieved by using Chi square as statistical measurement. The test for correlation on knowledge, attitude and practice regarding antibiotics was done by using Spearman’s correlation statistical measurement. The significance of data was interpreted as significant when p-value is less than 0.05.

Following table denoted the statistical test used to analyze dependent variables in relation to independent variables.

Table 2: Statistical measurement used in the analysis of variables

Data Analysis	Independent Variable (type)	Dependent Variable (type)
Chi Square	Socio-demographic characteristics (Categorial)	Practice score (Categorial)
	Knowledge score (Categorial)	Practice score (Categorial)
	Attitude score (Categorial)	Practice score (Categorial)
Spearman's correlation	Knowledge score (Categorial)	Practice score (Categorial)
	Attitude score (Categorial)	

Since Spearman's correlation can predict the direction and correlation between variables. Therefore, it could also be used in conjunction with Chi square statistics.

3.9 Ethical Consideration

The study proposal and questionnaire was sent to experts from The Ethics Review Committee for Research involving Human Research Subjects, Health science group, Chulalongkorn University to approve for ethical aspects before data collection start. Necessary changes and revision were carried out as per the feedback from the committee board before moving ahead with the data collection. The Ethics Review Committee for Research involving Human Research Subjects, Health science group, Chulalongkorn University approved this study (Research Number 193.1/55) on 20 February 2013.

3.10 Benefit of the study

The results of this study identified the level of knowledge, attitude and practice regarding antibiotics use among adults in Kuanthani Subdistrict, Kantang

District, Trang Province, Thailand. The results represented how people use their medicine, especially antibiotics, rationally or not.

The issue of antibiotic resistance and irrational use of antibiotics have been seriously considered worldwide, and appropriate solutions were being developed. It was crucial to know the level of knowledge, attitude, and practices in people who use antibiotics. The results of this study described the current situation of knowledge, attitude and practice regarding rational antibiotics use of community in southern part of Thailand. The study was also beneficial in raising awareness among the health care providers, the patients, and the general public on the issue of antibiotic resistance and irrational use of antibiotics. At the same time this study was beneficial as a baseline document for future research studies.

3.11 Limitation of the study

The limitations in this study could be the fact that the study results only described the level of knowledge, attitude and practice regarding antibiotics use among adults in Kuanthani Subdistrict, Kantang District, Trang Province, Thailand. The result from this study could be represented for another population or another province.

CHAPTER IV

RESULTS

This study was an analytical cross-sectional research to study about knowledge, attitudes, and practices regarding antibiotic use by people in Kuanthani subdistrict, Kantang district, Trang province, Thailand. The total subjects were 396 study participants and response rate were 100%.

This chapter presented the findings from the data analysis. The data analysis reported on the survey outcomes and results, in following orders:

1. General socio-demographic characteristics of the study subjects
2. Knowledge about antibiotics
3. Attitudes towards antibiotics
4. Practices regarding antibiotics use
5. Associations between general socio-demographic characteristics with knowledge, with attitudes, and with practice of antibiotics use
6. Associations between knowledge and attitudes of antibiotics
7. Associations between knowledge and practices of antibiotics
8. Associations between attitudes and practices of antibiotics

4.1 General socio-demographic characteristics of the study subjects

The description of general socio-demographic characteristics of the study subjects including gender, age, religion, marital status, education, occupation, monthly income, co-morbid disease, and current medication use within last 3 months. A total of 396 subjects completed the study questionnaire.

Table 3: Socio-demographic characteristics of the study subjects

Socio-demographic characteristic		Number (n)	Percentage (%)
Gender (n=396)	Male	101	25.51
	Female	295	74.49
Age (n=396)	18-29	179	45.20
	30-49	175	44.19
	≥ 50	42	10.61
Religion (n=396)	Buddhism	296	74.75
	Non-Buddhism	100	25.25
Marital status (n=396)	Married	199	50.25
	Single/Widowed/Divorced /Separated	197	49.75
Education (n=395)	≤ Primary school	76	19.24
	Secondary school/ Vocational school	125	31.65
	Diploma	92	23.29
	≥ Bachelor degree	102	25.82
Occupation (n=396)	Agricultural sector	126	31.82
	Non-agricultural sector	270	68.18
Monthly income (n=391)	≤ 7,000 Baht	168	42.97
	7,001-10,000 Baht	107	27.37
	≥ 10,001 Baht	116	29.67

According to Table 3, regarding gender, the study population comprises of 295 (74.49%) females and 101 (25.51%) males.

Regarding age, the majority (45.20%) of the study subjects are in 18-29 years old group (45.20%), follow by 30-49 years old group (44.19%) and equal 50 years old and over group (10.61%), respectively.

Regarding religion, the majority (74.75%) of the study subjects are Buddhism, follow by Non-Buddhism religion (25.25%) which are consisted of Muslim and Christian religion, respectively.

Regarding marital status, the majority (50.25%) of the study subjects were married. The rest of the study subjects (49.75%) were single, widowed, divorced or separated.

Regarding education, the majority of the study subjects (31.65%) finished secondary school or vocational school. Around one-fourth (25.82%) of the study subjects were graduated in bachelor degree or higher than bachelor degree. Ninety-two subjects (23.29%) graduated in diploma degree. The rest of study subjects (19.24%) received less than primary education or equal, respectively.

Regarding occupation, the majority (68.18%) of the study subjects worked in the non-agricultural sector, including employee, merchant or business owner, general labor, government officer, student, and others, such as housewife, respectively. One hundred-twenty six participants out of 396 (31.82%) were working in agricultural sector.

Regarding income, the majority (42.97%) of the study subjects had income less than 7,000 Baht per month. One hundred-seven participants (27.37%) earned 7,001-10,000 Baht per month. One hundred-sixteen participants (29.67%) earned more than 10,000 Baht per month, respectively.

Table 4: Co-morbid diseases of the study subjects (n=396)

Co-morbid Diseases	Number (n)	Percentage (%)
Hypertension		
Yes	41	10.35
No	355	89.65
Diabetes Mellitus		
Yes	33	8.33
No	363	91.67

Table 4: Co-morbid diseases of the study subjects (n=396) (Cont.)

Co-morbid Diseases	Number (n)	Percentage (%)
Heart disease		
Yes	9	2.27
No	387	97.73
Hyperlipidemia		
Yes	19	4.80
No	377	95.20
Peptic Ulcer disease		
Yes	15	3.79
No	381	96.21
Allergy		
Yes	30	7.58
No	366	92.42
Asthma		
Yes	10	2.53
No	386	97.47
Headache		
Yes	14	3.54
No	382	96.46
Other disease		
Yes	6	1.52
No	390	98.48

According to Table 4, there were 41 study subjects (10.35%) who had hypertension, 33 subjects (8.33%) had diabetes mellitus, 9 subjects (2.27%) had heart disease, 19 subjects (4.80%) had hyperlipidemia, 15 subjects (3.79%) had peptic ulcer disease, 30 subjects (7.58%) had allergy, 10 subjects (2.53%) had asthma, 14 subjects (3.54%) had headache, and 6 subjects (1.52%) had other disease as co-morbid disease.

Table 5: Co-morbid diseases of the study subjects in conclusion (n=396)

Co-morbid Diseases	Number (n)	Percentage (%)
Yes	111	28.23
No	285	71.97

Overall, there were 285 (71.97%) study subjects who did not had co-morbid diseases and 111 (28.23%) study subjects who had co-morbid diseases, according to Table 5.

Table 6: Current medication use within last 3 months of the study subjects (n=396)

Current medication use	Number (n)	Percentage (%)
Antibiotics		
Yes	40	10.10
No	356	89.90
Analgesics and Antipyretic drugs		
Yes	230	58.08
No	166	41.92
Vitamins		
Yes	88	22.22
No	308	77.78
Contraceptives		
Yes	24	6.06
No	372	93.94
Chronic medication		
Yes	61	15.40
No	335	84.60
Other medication		
Yes	20	5.05
No	376	94.95

According to Table 6, there were 40 subjects (10.10%) who used antibiotics within last 3 months, 230 subjects (58.08%) who used analgesics and antipyretic drugs, 88 subjects (22.22%) used vitamins, 24 subjects (6.06%) used contraceptives, 61 subjects (15.40%) used chronic medication, and 20 subjects (5.05%) used other medication within last 3 months. The medication study subjects used the most within last 3 months were analgesics and antipyretic drugs (58.08%). Follow by vitamins (22.22%), and chronic medication (15.40%). Around 10 per cent (10.10%) of the study subjects used antibiotics within last 3 months.

Table 7: Current medication use within last 3 months of the study subjects in conclusion (n=396)

Current medication use	Number (n)	Percentage (%)
Use	309	78.03
Not use	87	21.97

Overall, there were 309 (78.03%) study subjects who currently used medication within last 3 months and 87 (21.97%) study subjects who did not currently use any medication within last 3 months, according to Table 7.

4.2 Knowledge about antibiotics of study subjects

Table 8: Distribution of knowledge level about antibiotics of the study subjects (n=396)

Knowledge Level	Number (n)	Percentage (%)
Low (< 50% correct response)	71	17.93
Moderate (50-70% correct response)	162	40.91
High (> 70% correct response)	163	41.16
Total	396	100.00
Mean = 10.43 SD = 2.84 Minimum = 3 Maximum = 16		

Questions were asked to explore the respondents' knowledge about antibiotics use included 16 questions which consisted of both right and wrong statements. For right questions, the respondents got 1 score for 'Yes' answer and 0 score for 'No' and 'do not know' answer. For wrong questions, the respondents got 0 score for 'Yes' and 'do not know' answer, and 1 score for 'No' answer. Possible scores ranged between 0-16 points. Maximum obtainable score was 16 points for this part.

The knowledge score was classified into 3 categorical levels using classification from relevant KAP study in antibiotics use (Sirirassamee, 1997; Shehadeh et al., 2011). The knowledge score that was below 50% correct response was classified as "Low knowledge level" group. The knowledge score that was between 50-70% correct response was classified as "Moderate knowledge level" group and the knowledge score that was above 70% correct response was classified as "High knowledge level" group, respectively.

According to Table 8, distribution of knowledge level about antibiotics of the study subjects showed that the majority (41.16%) of the study subjects had high knowledge level. The moderate knowledge level was 40.91% and low knowledge level was 17.93%, respectively. The mean knowledge score was 10.43 $\pm$ 2.84. The maximum knowledge score was 16. The minimum knowledge score was 3.

Table 9: Frequency and percentage of respondents who answered true and false to each question on knowledge about antibiotics (n=396)

No.	**Statement**	**True n (%)**	**False n (%)**
1	Antibiotics is the medicine to treat bacterial infection	247 (62.37)	149 (37.63)
2 *	Antibiotics is the medicine to treat muscle pain and inflammation from hard work or sport injury	232 (58.59)	164 (41.41)

* Wrong statement

Table 9: Frequency and percentage of respondents who answered true and false to each question on knowledge about antibiotics (n=396) (Continued)

No.	Statement	True n (%)	False n (%)
3 *	Antibiotics is the medicine to treat viral infection, such as cold and flu	175 (44.19)	221 (55.81)
4 *	One can take antibiotics to reduce fever	74 (18.69)	322 (81.31)
5 *	Antibiotics is the medicine to treat fungal infection, such as Hong Kong foot	143 (36.11)	253 (63.89)
6 *	Antibiotics can treat any infections	173 (43.69)	223 (56.31)
7	One must take all antibiotics dose until finish the recommended course by physician or pharmacist even though symptoms are better	330 (83.33)	66 (16.67)
8 *	Unfinished antibiotics can be kept to use in the future	105 (26.52)	291 (73.48)
9	One should not use hot water to dissolve pediatric antibiotics powder because hot water can destroy the efficacy of antibiotics	258 (65.15)	138 (34.85)
10	Antibiotics side effects such as nausea, vomiting, and diarrhea	187 (47.22)	209 (52.78)
11	Symptoms of antibiotics allergy such as rash, eye and lip swollen, palpitation, difficulty breathing, shortness of breath	283 (71.46)	113 (28.54)
12	Unfinished antibiotics dose is the cause for bacterial resistance	296 (74.75)	100 (25.25)

* Wrong statement

Table 9: Frequency and percentage of respondents who answered true and false to each question on knowledge about antibiotics (n=396) (Continued)

No.	Statement	True n (%)	False n (%)
13	After having a drug resistant, one will never use that antibiotics again for infection treatment	221 (55.81)	175 (44.19)
14	Food, drinks, and alcohol, if taken together, can destroy the efficacy of antibiotics	262 (66.16)	134 (33.84)
15	Heat and direct sunlight can damage antibiotics	334 (84.34)	62 (15.66)
16	One can store dissolved pediatric antibiotics powder in the refrigerator not more than 7 days	238 (60.10)	158 (39.90)

* Wrong statement

According to Table 9, frequency and percentage of respondents who answered true and false to each question on knowledge about antibiotics were demonstrated. Item 2, 3, 4, 5, 6, and 8 are statements that are wrong regarding knowledge of antibiotics.

Statement item 1 – 6 identified knowledge of respondents about appropriate indication of antibiotics. Item 1 is the correct indication of antibiotics that "Antibiotics is the medicine to treat bacterial infection" and the majority (62.37%) of the study subjects gave right answer to this statement that antibiotics is the medicine to treat bacterial infection, while around one-third of the subjects (37.63%) gave wrong answer to this statement.

Statement item 2 – 6 are the wrong indications of antibiotics, such as antibiotics can treat muscle pain and inflammation, can reduce fever, can treat viral infection and fungal infection. From the data shown in statement 2, there were around half of the respondents (58.59%) who misunderstood that "Antibiotics is the medicine to treat muscle pain and inflammation from hard work or sport injury", while 41.41% have appropriate knowledge that is not the right indication of antibiotics. This can

imply that around half of the study subjects have inappropriate knowledge that antibiotics drug is fall between some groups of anti-inflammatory drug.

From the data shown in statement 3, there were 44.19% of respondents who misunderstood that “Antibiotics is the medicine to treat viral infection, such as cold and flu”, while 55.81% of the respondents have right knowledge. This data can demonstrate that the study subjects have inappropriate knowledge about origin of cold and flu infection. Such infections are caused by virus; therefore, antibiotics medication is unable to treat infections caused by virus.

Regarding statement 4, there were 81.31% of respondents who gave right answer to the statement “One can take antibiotics to reduce fever”, while 18.69% of the respondents gave wrong answer to this statement. Regarding statement 5, there were 63.89% of respondents who gave right answer to the statement “Antibiotics is the medicine to treat fungal infection, such as Hong Kong foot”, while 36.11% of the respondents have wrong knowledge. Regarding statement 6, there were 56.31% of respondents who gave right answer to the statement “Antibiotics can treat any infections”, while 43.69% of the respondents misunderstood that statement.

Statement item 7 identified compliance and completion of antibiotic course. There were 83.33% of study subjects who showed right knowledge about compliance and completion of antibiotic course, while 16.67% had wrong knowledge regarding compliance and completion of antibiotic course.

Item 8 is the knowledge regarding leftover antibiotics. This statement “Unfinished antibiotics can be kept to use in the future”, however, demonstrated wrong knowledge regarding leftover antibiotics. There were 73.48% of the study subjects who showed right knowledge regarding leftover antibiotics, while 26.52% of the study subjects showed wrong knowledge regarding leftover antibiotics.

Item 9 is the knowledge regarding how to administration antibiotics to children as of the statement demonstrated “One should not use hot water to dissolve pediatric antibiotics powder because hot water can destroy the efficacy of antibiotics”.

There were 65.15% of study subjects who had right knowledge and 34.85% had wrong knowledge regarding how to administration antibiotics to children.

Item 10 is the knowledge about antibiotics side effects, 47.22% of the respondents had right knowledge regarding the statement “Antibiotics side effects such as nausea, vomiting, and diarrhea”, and 52.78% had wrong knowledge regarding antibiotics side effects.

Item 11 is the knowledge regarding antibiotics allergy shown in the statement “Symptoms of antibiotics allergy such as rash, eye and lip swollen, palpitation, difficulty breathing, shortness of breath”, 71.46% of the respondents had right knowledge and 28.54% had wrong knowledge about antibiotic allergy.

Items 12 and 13 shows knowledge regarding bacterial resistance, most of the study subjects had right knowledge regarding bacterial resistance. The majority (74.75%) of the study subjects gave right answer to the statement “Unfinished antibiotics dose is the cause for bacterial resistance”, while 25.25% gave wrong answer to that statement. Around half of the respondents (55.81%) have right knowledge regarding the statement “After having a drug resistant, one will never use that antibiotics again for infection treatment”, while 44.19% of the respondents have wrong knowledge regarding this statement.

Item 14 is the knowledge about drug interaction with food and alcohol shown in the statement “Food, drinks, and alcohol, if taken together, can destroy the efficacy of antibiotics”, 66.16% of the study subjects had right knowledge and 33.84% had wrong knowledge.

Items 15 and 16 are the knowledge regarding storage of antibiotics. The author found that most of the study subjects had right knowledge regarding storage of antibiotics. There were 84.34% of the respondents who have right knowledge regarding the statement “Heat and direct sunlight can damage antibiotics”, while 15.66% of the respondents have wrong knowledge. There were 60.10% of the respondents who have right knowledge regarding the statement “One can store

dissolved pediatric antibiotics powder in the refrigerator not more than 7 days", while 39.90% of the respondents have wrong knowledge.

4.3 Attitudes towards antibiotics

Table 10: Distribution of attitude level towards antibiotics of the study subjects (n=390)

Attitude Level	Number (n)	Percentage (%)
Poor (1.00 – 2.09)	65	16.67
Moderate (2.10 – 2.88)	293	75.13
Good (2.89 – 3.00)	32	8.21
Total	390	100.00
Mean = 2.49 SD = 0.39 Minimum = 1.27 Maximum = 3.00		

Attitude levels were categorized into 3 levels using mean score of respondents to determine. "Poor" attitude level was less than mean minus standard deviation. Therefore, respondents who had attitude mean score between 2.09 to 1.00 would be classified as "Poor Attitude Level". "Moderate" attitude level was equal mean $\pm$ standard deviation. Therefore, respondents who had attitude mean score between 2.88 to 2.10 would be classified as "Moderate Attitude Level". In addition, "Good" attitude level was higher than mean plus standard deviation. Respondents who had attitude mean score between 2.89 to 3.00 would be classified as "Good Attitude Level", respectively.

According to Table 10, the majority (75.13%) of the study subjects had moderate attitude level, follow by 65 subjects (16.67%) with poor attitude level, and 32 subjects (8.21%) with good attitude level, respectively. The mean attitude score was 2.49 $\pm$ 0.39.The maximum attitude score was 3.00; the minimum attitude score was 1.27.

Table 11: Frequency and percentage of respondents who answered “Agree”, “Neutral” and “Disagree” to each question on attitudes towards antibiotics (n=389)

No.	Statement	Agree n (%)	Neutral n (%)	Disagree n (%)
1 *	You should buy same antibiotics that worked for you because it helps save more money	75 (18.94)	45 (11.36)	276 (69.70)
2 *	You should buy same antibiotics that worked for you because it helps save time to visit clinic or hospital	73 (18.43)	33 (8.33)	290 (73.23)
3 *	You think that having antibiotics injection can treat infection faster than oral antibiotics	181 (45.82)	69 (17.47)	145 (36.71)
4 *	You think that you need to take antibiotics every time whenever you are not feeling well	52 (13.13)	32 (8.08)	312 (78.79)
5 *	You think that it is boring to finish the whole antibiotics course when your symptom is getting better	99 (25.00)	84 (21.21)	213 (53.79)
6 *	You think when you start to feel unwell you should take antibiotics as soon as possible to prevent more symptoms	53 (13.38)	37 (9.34)	306 (77.27)
7 *	You think that when you have the same symptoms you can take the same antibiotics that worked for you without going to see a doctor	34 (8.59)	34 (8.59)	328 (82.83)

* Negative statement

Table 11: Frequency and percentage of respondents who answered “Agree”, “Neutral” and “Disagree” to each question on attitudes towards antibiotics (n=389) (Continued)

No.	Statement	Agree n (%)	Neutral n (%)	Disagree n (%)
8 *	You think that you can open antibiotics capsule to use the powder inside to treat wound infection	60 (15.19)	74 (18.73)	261 (66.08)
9 *	You are not happy if your physician or pharmacist does not prescribe antibiotics that you request	50 (12.63)	122 (30.81)	224 (56.57)
10 *	You think that hot water will help dissolve pediatric antibiotics powder and increase efficacy of the medicine	64 (16.20)	86 (21.77)	245 (62.03)
11	You think that one should consult physician or pharmacist to help recommend appropriate antibiotics for their symptoms	340 (85.86)	29 (7.32)	27 (6.82)
12 *	After you recover from an illness, you think that it is not useful to take the antibiotics until finished	82 (20.87)	63 (16.03)	248 (63.10)
13 *	You think that one should share their antibiotics with their friends	43 (10.89)	64 (16.20)	288 (72.91)

* Negative statement

Table 11: Frequency and percentage of respondents who answered “Agree”, “Neutral” and “Disagree” to each question on attitudes towards antibiotics (n=389) (Continued)

No.	Statement	Agree n (%)	Neutral n (%)	Disagree n (%)
14 *	You think that one should start taking antibiotics as soon as possible when the symptom of sore throat or fever start to develop	88 (22.22)	73 (18.43)	235 (59.34)
15 *	You think that one who never allergic to antibiotics will never allergic to any other medicine	59 (14.94)	81 (20.51)	255 (64.56)

* Negative statement

According to Table 11, frequency and percentage of respondents who answered “Agree”, “Neutral” and “Disagree” to each question on attitudes towards antibiotics were displayed.

Statement item 1 – 2 showed attitudes towards source of antibiotics, there were negative statement show poor attitude regarding source of antibiotics. The majority of the study subjects had answered “disagree” with the statements regarding source of antibiotics. Item 1 showed that 69.70% of study subjects did not agree with the statement “You should buy same antibiotics that worked for you because it helps save more money”, while 11.36% have neutral attitude, and 18.94% agree with this statement.

Item 2 showed that 73.23% of the study subjects did not agree with the statement “You should buy same antibiotics that worked for you because it helps save time to visit clinic or hospital”, while 8.33% of the study subjects have neutral attitude, and 18.94% agree with this statement.

Statement items 4, 6, 7, and 14 showed attitudes regarding appropriate indication of antibiotics. Item 4 showed that 312 subjects (78.79%) did not agree with

the statement “You think that you need to take antibiotics every time whenever you are not feeling well”. Item 6 showed that 306 subjects (77.27%) did not agree with the statement “You think when you start to feel unwell you should take antibiotics as soon as possible to prevent more symptoms”. Item 7 showed that 328 subjects (82.83%) did not agree with the statement “You think that when you have the same symptoms you can take the same antibiotics that worked for you without going to see a doctor”. Item 14 showed that 235 subjects (59.34%) did not agree with the statement “You think that one should start taking antibiotics as soon as possible when the symptom of sore throat or fever starts to develop”.

Statement items 3, 8, and 10 showed attitudes regarding antibiotics administration for children and adult. Item 3 showed that 181 subjects (45.82%) agree with the statement “You think that having antibiotics injection can treat infection faster than oral antibiotics”. This data can demonstrate that the study subjects tend to believe that having antibiotic injection can treat symptoms faster than having oral medications. Item 8 showed that 261 subjects (66.08%) did not agree with the statement “You think that you can open antibiotics capsule to use the powder inside to treat wound infection”. Item 10 showed that 245 subjects (62.03%) did not agree with the statement “You think that hot water will help dissolve pediatric antibiotics powder and increase efficacy of the medicine”.

Statement items 5, 9, 11, 12, and 13 showed attitudes regarding compliance and completion of antibiotic course. Item 5 showed that 213 subjects (53.79%) did not agree with the statement “You think that it is boring to finish the whole antibiotics course when your symptom is getting better”, while 99 subjects (25.00%) agree with this statement. This can imply that 25% of the study subjects did not finish the whole course of antibiotics when their symptoms are better. Item 9 showed that 224 subjects (56.57%) did not agree with the statement “You are not happy if your physician or pharmacist does not prescribe antibiotics that you request”, while 122 subjects (30.81%) had neutral attitude and 50 subjects (12.63%) agreed with the statement. Item 11 showed that 340 subjects (85.86%) agreed with the statement “You think that one should consult physician or pharmacist to help recommend appropriate antibiotics

for their symptoms". This can imply that study subjects were more likely to have good attitude towards physician and pharmacist in prescribing and counseling about antibiotics. Item 12 showed that 248 subjects (63.10%) did not agree with the statement "After you recover from an illness, you think that it is not useful to take the antibiotics until finished". Item 13 showed that 288 subjects (72.91%) did not agree with the statement "You think that one should share their antibiotics with their friends".

Statement item 15 showed attitudes regarding antibiotic allergy, 64.56% of the study subjects did not agree with the statement "You think that one who never allergic to antibiotics will never allergic to any other medicine". While 14.94% of the respondents agreed with that statement.

4.4 Practices regarding antibiotics use

Table 12: Distribution of practice level regarding antibiotics use of the study subjects (n=388)

Practice Level	Number (n)	Percentage (%)
Poor (1.00 – 2.45)	65	16.75
Moderate (2.46 – 2.90)	270	69.59
Good (2.91 – 3.00)	53	13.66
Total	388	100.00
Mean = 2.68 SD = 0.22 Minimum = 1.81 Maximum = 3.00		

Practice levels were categorized into 3 levels using mean score of respondents to determine. "Poor" practice level was less than mean minus standard deviation. Therefore, respondents who had practice mean score between 2.45 to 1.00 would be classified as "Poor Practice Level". "Moderate" practice level was equal mean $\pm$ standard deviation. Therefore, respondents who had practice mean score between 2.90

to 2.46 would be classified as “Moderate Practice Level”. In addition, “Good” practice level was higher than mean plus standard deviation. Respondents who had practice mean score between 2.91 to 3.00 would be classified as “Good Practice Level”, respectively.

According to Table 12, the majority (69.59%) of the study subjects had moderate practice level; follow by 65 subjects (16.75%) had poor practice level, and 53 subjects (13.66%) had good practice level, respectively. The mean practice score was 2.68 $\pm$ 0.22.The maximum practice score was 3.00, the minimum practice score was 1.81.

Table 13: Frequency and percentage of respondents who answered “Always/Usually”, “Sometimes” and “Rarely/Never” to each question on practice regarding antibiotics use (n=388)

No.	**Statement**	**Always/ Usually n (%)**	**Sometimes n (%)**	**Rarely/ Never n (%)**
1 *	You take antibiotics every time that you start to feel unwell	4 (1.01)	148 (37.37)	244(61.62)
2 *	You ask your friends, family or other people to buy antibiotics for you	6 (1.52)	116 (29.29)	274(69.19)
3 *	You search for leftover antibiotics in your house to use	8 (2.02)	126 (31.82)	262(66.16)
4 *	You request to share some antibiotics from person who have experienced the same symptoms as you	5 (1.26)	75 (18.94)	316(79.80)

* Negative statement

Table 13: Frequency and percentage of respondents who answered “Always/Usually”, “Sometimes” and “Rarely/Never” to each question on practice regarding antibiotics use (n=388) (Continued)

No.	Statement	Always/ Usually n (%)	Sometimes n (%)	Rarely/ Never n (%)
5 *	You request your doctor or healthcare professional to give you antibiotic injection for relieving your illness	9 (2.27)	64 (16.16)	323(81.57)
6 *	You buy antibiotics yourself by telling the trade name that you prefer	10 (2.53)	124 (31.31)	262(66.16)
7 *	You buy antibiotics yourself by bringing old antibiotics packaging or the sample of used antibiotics that succeeded your illness to seek for	15 (3.81)	130 (32.99)	249(63.20)
8 *	You buy antibiotics yourself by suggestions from your friends, family, or the person you know	8 (2.02)	68 (17.17)	320(80.81)
9 *	You buy antibiotics yourself by suggestions from advertisement in television, radio, newspaper and internet	4 (1.01)	69 (17.47)	322(81.52)
10 *	You take antibiotics without looking for the label information on the sachet or the packaging first	10 (2.50)	45 (11.40)	341 (86.10)

* Negative statement

Table 13: Frequency and percentage of respondents who answered “Always/Usually”, “Sometimes” and “Rarely/Never” to each question on practice regarding antibiotics use (n=388) (Continued)

No.	Statement	Always/ Usually n (%)	Sometimes n (%)	Rarely/ Never n (%)
11	You read the label information, medicine name, and indication of antibiotics before taking it	284 (71.90)	80 (20.30)	31 (7.80)
12	You read the manufacturing date and expiry date printed on sachet or box of antibiotics before taking it	324 (81.82)	58 (14.65)	14 (3.54)
13	You observe the physical appearance of antibiotics such as color, flavor, and sedimentation before taking it	308 (77.78)	71 (17.93)	17 (4.29)
14	You do not drink alcohol while taking antibiotics	271 (68.61)	43 (10.89)	81 (20.51)
15 *	You distribute antibiotics that make your illness better to other person who have the same symptoms as you to try out	9 (2.28)	110 (27.85)	276 (69.87)
16 *	You increase antibiotics dose by yourself because you want to get well as fast as you can	10 (2.53)	62 (15.70)	323 (81.77)
17 *	You increase antibiotics dose by yourself because your symptoms are not getting better	3 (0.76)	66 (16.75)	325(82.49)
18 *	You stop taking antibiotics as soon as your symptoms are relieved	79 (20.00)	178 (45.06)	138(34.94)

* Negative statement

Table 13: Frequency and percentage of respondents who answered “Always/Usually”, “Sometimes” and “Rarely/Never” to each question on practice regarding antibiotics use (n=388) (Continued)

No.	Statement	Always/ Usually n (%)	Sometimes n (%)	Rarely/ Never n (%)
19	You discard any antibiotics that have changes in physical appearances such as color change or tablet/capsule getting wet	297 (75.19)	29 (7.34)	69 (17.47)
20 *	You open antibiotics capsule to take the powder inside or dissolve antibiotics tablet with water before taking it	12 (3.04)	45 (11.39)	338(85.57)
21 *	You keep stock some antibiotics at home in case of emergency	14 (3.55)	104 (26.40)	276(70.05)
22 *	If you forget to take antibiotics once, next time you will double dose it by yourself	8 (2.03)	63 (15.95)	324(82.03)
23	You take antibiotics 30 minutes to one hour before meal	164 (41.52)	148 (37.47)	83 (21.01)
24	You observe strange symptoms after taking antibiotics such as rash, swelling, nausea, vomiting, or shortness of breath	173 (43.91)	150 (38.07)	71 (18.02)
25 *	You store antibiotics in the car	9 (2.28)	46 (11.65)	340(86.08)
26 *	You store antibiotics in the bathroom	3 (0.76)	8 (2.03)	384(97.22)
27 *	You store antibiotics in the kitchen	12 (3.04)	50 (12.66)	333(84.30)

* Negative statement

According to Table 13, frequency and percentage of respondents who answered “Always/Usually”, “Sometimes” and “Rarely/Never” to each question on practice regarding antibiotics use were demonstrated. Items 1 and 5 were about appropriate indication of antibiotics. The majority (61.62%) of the respondents rarely or never take antibiotics every time that they start to feel unwell. The majority (81.57%) of the respondents rarely or never request their doctor or healthcare professional to give antibiotic injection for relieving illness.

Items 2 – 4 were about source of antibiotics and the method to obtain antibiotics. The majority (69.19%) of the respondents rarely or never ask their friends, family or other people to buy antibiotics for them. The majority (66.16%) of the respondents rarely or never search for leftover antibiotics in their house to use. The majority (79.80%) of the respondents rarely or never request to share some antibiotics from person who have experienced the same symptoms as they are.

Items 6 – 9 were about self-medication with antibiotics. The majority (66.16%) of the respondents rarely or never buy antibiotics by themselves by telling the trade name that they prefer. The majority (63.12%) of the respondents rarely or never buy antibiotics by themselves by bringing old antibiotics packaging or the sample of used antibiotics that succeeded their illness to seek for. The majority (80.81%) of the respondents rarely or never buy antibiotics by themselves by suggestions from their friends, family, or the person they know. The majority (81.52%) of the respondents rarely or never buy antibiotics by themselves by suggestions from advertisement in television, radio, newspaper and internet.

Items 10 – 13 were about label reading of medicine information and expiry date. The majority (86.10%) of the respondents rarely or never take antibiotics without looking for the label information on the sachet or the packaging first, 71.90% of the respondents read the label information, medicine name, and indication of antibiotics before taking it, 81.82% read the manufacturing date and expiry date printed on sachet or box of antibiotics before taking it. The majority (77.78%) of the respondents observe the physical appearance of antibiotics such as color, flavor, and sedimentation before taking it.

Item 14 was about drug interaction with food and drinks. The majority (68.61%) of the respondents did not drink alcohol while taking antibiotics.

Item 15 was about antibiotics sharing with others. The majority (69.87%) of the respondents rarely or never distribute antibiotics that make their illness better to other person who have the same symptoms to try out.

Items 16 – 18 were about compliance and completion of antibiotic course, 81.77% of the respondents rarely or never increase antibiotics dose by themselves because they want to get well as fast as they can, 82.49% rarely or never increase antibiotics dose by themselves because their symptoms are not getting better, 34.94% stop taking antibiotics as soon as their symptoms are relieved.

Items 20, 22 – 23 were about antibiotic administration for children and adult, 85.57% of the respondents rarely or never open antibiotics capsule to take the powder inside or dissolve antibiotics tablet with water before taking it, 82.03% rarely or never double dose by themselves If they forget to take antibiotics once, 41.52% take antibiotics 30 minutes to one hour before meal.

Item 21 was about keeping antibiotics stock for emergency use, 70.05% rarely or never keep stock some antibiotics at home in case of emergency.

Item 24 was about side effects of antibiotics, 43.91% observe strange symptoms after taking antibiotics such as rash, swelling, nausea, vomiting, or shortness of breath.

Items 19, 25 – 27 were about storage of antibiotics. The majority (75.19%) of the study participants always or usually discard any antibiotics that have changes in physical appearances such as color change or tablet/capsule getting wet. Most of the study subjects had good practice in storing antibiotics far away from moisture and heat, 86.08% of the respondents rarely or never stored antibiotics in the car, 97.22% of the respondents rarely or never stored antibiotics in the bathroom, and 84.30% of the respondents rarely or never stored antibiotics in the kitchen.

4.5 Associations between general socio-demographic characteristics with knowledge, with attitudes, and with practice of antibiotics use

Associations between general socio-demographic characteristics with knowledge, with attitudes, and with practices regarding antibiotics use were demonstrated. Chi square test was the statistical measurement used. Significant differences were determined at p-value < 0.05.

There were significant associations between knowledge about antibiotics with gender, age, marital status, education, and monthly income, respectively.

There were significant associations between attitudes toward antibiotics with gender, age, marital status, education, monthly income, co-morbid diseases, and current medication used within last 3 months, respectively.

There were significant associations between practice regarding antibiotics use with gender, age, religion, education, co-morbid diseases, and current medication used within last 3 months, respectively.

The following tables demonstrated associations between general socio-demographic characteristics, co-morbid diseases of the study subjects, current medication use within last 3 months, and current antibiotics use within last 3 months with knowledge, with attitudes, and with practice regarding antibiotics use.

4.5.1 Associations between socio-demographic characteristics and level of knowledge

Table 14: Associations between socio-demographic characteristics with knowledge level about antibiotics

Socio-demographic characteristics	**Knowledge Level**			**Chi square**	**P-value**
	Low n (%)	**Moderate n (%)**	**High n (%)**		
Gender				14.976	0.001*
- Male	29 (28.71)	44 (43.56)	28 (27.72)		
- Female	42 (14.24)	118 (40.00)	135 (45.76)		

Table 14: Associations between socio-demographic characteristics with knowledge level about antibiotics (Continued)

Socio-demographic characteristics	Knowledge Level			Chi square	P-value
	Low n (%)	Moderate n (%)	High n (%)		
Age (Year)				20.791	< 0.001*
- 18-29	18 (10.06)	70 (39.11)	91 (50.84)		
- 30-49	40 (22.86)	77 (44.00)	58 (33.14)		
- ≥ 50	13 (30.95)	15 (35.71)	14 (33.33)		
Religion				1.475	0.478
- Buddhism	54 (18.24)	116 (39.19)	126 (42.57)		
- Non-Buddhism	17 (17.00)	46 (46.00)	37 (37.00)		
Marital status				15.447	< 0.001*
- Married	44 (22.11)	92 (46.23)	63 (31.66)		
- Single/Widowed/ Divorced/Separated	27 (13.71)	70 (35.53)	100 (50.76)		
Education				32.993	< 0.001*
- ≤ Primary school	24 (31.58)	28 (36.84)	24 (31.58)		
- Secondary and Vocational school	18 (14.40)	60 (48.00)	47 (37.60)		
- Diploma	7 (7.61)	28 (30.43)	57 (62.00)		
- ≥ Bachelor degree	22 (21.57)	46 (45.10)	34 (33.33)		
Occupation				1.759	0.415
- Agricultural sector	26 (20.63)	46 (36.51)	54 (42.86)		
- Non-Agricultural sector	45 (16.67)	116 (42.96)	109 (40.37)		
Monthly income				14.760	0.005*
- ≤ 7,000	21 (12.50)	61 (36.31)	86 (51.19)		
- 7,001-10,000	22 (20.56)	44 (41.12)	41 (38.32)		
- ≥ 10,001	28 (24.14)	53 (45.69)	35 (30.17)		

According to Table 14, associations between general socio-demographic characteristics with knowledge about antibiotics were demonstrated. There were significant associations between knowledge with gender ($p = 0.001$), age ($p < 0.001$), marital status ($p < 0.001$), education ($p < 0.001$), and monthly income ($p= 0.005$), respectively. Female, younger age group, unmarried person, person who receive higher education, and person with lower income tend to had better knowledge about antibiotics.

Table 15: Associations between co-morbid diseases of the study subjects, current medication use, and current antibiotics use with knowledge level about antibiotics

Parameters	**Knowledge Level**			**Chi square**	**P-value**
	Low n (%)	**Moderate n (%)**	**High n (%)**		
Co-morbid diseases				5.846	0.054
- Yes	26 (23.42)	49 (44.14)	36 (32.43)		
- No	45 (15.79)	113 (39.65)	127 (44.56)		
Current medication use within last 3 months				1.787	0.409
- Yes	59 (19.09)	122 (39.48)	128 (41.42)		
- No	12 (13.79)	40 (45.98)	35 (40.23)		
Current antibiotics use within last 3 months				3.331	0.189
- Yes	3 (7.50)	19 (47.50)	18 (45.00)		
- No	68 (19.10)	143 (40.17)	145 (40.73)		

* Significant differences at p-value < 0.05

According to Table 15, there were no significant associations between knowledge and co-morbid disease of the study subjects, current medication use within last 3 months, and current antibiotics use within last 3 months, respectively.

4.5.2 Associations between socio-demographic characteristics and level of attitude

Table 16: Associations between general socio-demographic characteristics with attitudes regarding antibiotics use

Socio-demographic characteristics	Attitude Level			Chi square	P-value
	Poor n (%)	Moderate n (%)	Good n (%)		
Gender				23.288	< 0.001*
- Male	32 (32.00)	63 (63.00)	5 (5.00)		
- Female	33 (11.38)	230 (79.31)	27 (9.31)		
Age (Year)				27.066	< 0.001*
- 18-29	16 (9.09)	143 (81.25)	17 (9.66)		
- 30-49	32 (18.60)	125 (72.67)	15 (8.72)		
- ≥ 50	17 (40.48)	25 (59.52)	0 (0.00%)		
Religion				1.754	0.416
- Buddhism	48 (16.49)	216 (74.23)	27 (9.28)		
- Non-Buddhism	17 (17.17)	77 (77.78)	5 (5.05)		
Marital status				9.615	0.008*
- Married	44 (22.45)	138 (70.41)	14 (7.14)		
- Single/Widowed/ Divorced/Separated	21 (10.82)	155 (79.90)	18 (9.28)		
Education				26.423	< 0.001*
- ≤ Primary school	25 (33.78)	46 (62.16)	3 (4.05)		
- Secondary and Vocational school	22 (17.74)	92 (74.19)	10 (8.06)		
- Diploma	5 (5.62)	73 (82.02)	11 (12.36)		
- ≥ Bachelor degree	13 (12.75)	81 (79.41)	8 (7.84)		

* Significant differences at p-value < 0.05

Table 16: Associations between general socio-demographic characteristics with attitudes regarding antibiotics use (Continued)

Socio-demographic characteristics	Attitude Level			Chi square	P-value
	Poor n (%)	Moderate n (%)	Good n (%)		
Occupation				0.538	0.764
- Agricultural sector	23 (18.70)	90 (73.17)	10 (8.13)		
- Non-Agricultural sector	42 (15.73)	203 (76.03)	22 (8.24)		
Monthly income				19.877	0.001*
- ≤ 7,000	15 (9.15)	131 (79.88)	18 (10.98)		
- 7,001-10,000	15 (14.15)	85 (80.19)	6 (5.66)		
- ≥ 10,001	32 (27.83)	75 (65.22)	8 (6.96)		

* Significant differences at p-value < 0.05

According to Table 16, associations between general socio-demographic characteristics with attitudes regarding antibiotics use were demonstrated. There were significant associations between attitude with gender ($p < 0.001$), age ($p < 0.001$), marital status ($p = 0.008$), education ($p < 0.001$), and monthly income ($p = 0.001$). Female, younger age group, unmarried person, person who receive higher education, and person with lower income tend to had better attitudes towards antibiotics.

Table 17: Associations between co-morbid diseases of the study subjects, current medication use, and current antibiotics use with attitude level towards antibiotics

Parameters	Attitude Level			Chi square	P-value
	Poor n (%)	Moderate n (%)	Good n (%)		
Co-morbid diseases				8.627	0.013*
- Yes	27 (24.77)	71 (65.14)	11 (10.09)		
- No	38 (13.52)	222 (79.00)	21 (7.47)		

Table 17: Associations between co-morbid diseases of the study subjects, current medication use, and current antibiotics use with attitude level towards antibiotics (Continued)

Parameters	**Attitude Level**			**Chi square**	**P-value**
	Poor n (%)	**Moderate n (%)**	**Good n (%)**		
Current medication use within last 3 months				10.749	0.005*
- Yes	58 (19.14)	216 (71.29)	29 (9.57)		
- No	7 (8.05)	77 (88.51)	3 (3.45)		
Current antibiotics use within last 3 months				5.313	0.070
- Yes	5 (12.50)	28 (70.00)	7 (17.50)		
- No	60 (17.14)	265 (75.71)	25 (7.14)		

* Significant differences at p-value < 0.05

According to Table 17, there was significant association between attitudes level with co-morbid disease of the study subjects (p = 0.013). The study subjects who did not have co-morbid disease were more likely to had better attitude regarding antibiotics than the study subjects who had co-morbid disease. In addition, there was significant association between attitude level and current medication use within last 3 months of the study subjects (p = 0.005). The study subjects who used some medications within last 3 months tend to have better attitude regarding antibiotics than the study subjects who were not using any medication within last 3 months.

4.5.3 Associations between socio-demographic characteristics and level of practice

Table 18: Associations between general socio-demographic characteristics with practice levels

Socio-demographic characteristics	Practice Level			Chi square	P-value
	Poor n (%)	Moderate n (%)	Good n (%)		
Gender				20.062	< 0.001*
- Male	28 (28.87)	65 (67.00)	4 (4.12)		
- Female	37 (12.71)	205 (70.45)	49 (16.84)		
Age (Year)				14.090	0.007*
- 18-29	22 (12.64)	127 (72.99)	25 (14.37)		
- 30-49	29 (16.76)	117 (67.63)	27 (15.61)		
- ≥ 50	14 (34.15)	26 (63.41)	1 (2.44)		
Religion				7.738	0.021*
- Buddhism	47 (16.10)	197 (67.47)	48 (16.44)		
- Non-Buddhism	18 (18.75)	73 (76.04)	5 (5.21)		
Marital status				0.861	0.650
- Married	35 (17.95)	136 (69.74)	24 (12.31)		
- Single/Widowed/ Divorced/Separated	30 (15.54)	134 (69.43)	29 (15.03)		
Education				18.206	0.006*
- ≤ Primary school	24 (32.00)	45 (60.00)	6 (8.00)		
- Secondary and Vocational school	18 (14.52)	89 (71.77)	17 (13.71)		
- Diploma	11 (12.36)	61 (68.54)	17 (19.10)		
- ≥ Bachelor degree	12 (12.12)	74 (74.75)	13 (13.13)		

* Significant differences at p-value < 0.05

Table 18: Associations between general socio-demographic characteristics with practice levels (Continued)

Socio-demographic characteristics	Practice Level			Chi square	P-value
	Poor n (%)	Moderate n (%)	Good n (%)		
Occupation				3.645	0.162
- Agricultural sector	23 (18.55)	90 (72.58)	11 (8.87)		
- Non-Agricultural sector	42 (15.91)	180 (68.18)	42 (15.91)		
Monthly income				6.835	0.145
- ≤ 7,000	22 (13.50)	113 (69.33)	28 (17.18)		
- 7,001-10,000	15 (14.29)	76 (72.38)	14 (13.33)		
- ≥ 10,001	26 (22.61)	78 (67.83)	11 (9.57)		

* Significant differences at p-value < 0.05

According to Table 16, associations between general socio-demographic characteristics with practices were demonstrated. There were significant associations between practice with gender ($p < 0.001$), age ($p = 0.007$), religion ($p = 0.021$), and education ($p = 0.006$), respectively. Female, younger age group, person who were Buddhism, and person who receive higher education tend to had better practices regarding antibiotics use.

Table 19: Associations between co-morbid diseases of the study subjects, current medication use, and current antibiotics use with practice level regarding antibiotics

Parameters	Practice Level			Chi square	P-value
	Poor n (%)	Moderate n (%)	Good n (%)		
Co-morbid diseases				11.806	0.003*
- Yes	28 (25.69)	73 (66.97)	8 (7.34)		
- No	37 (13.26)	197 (70.61)	45 (16.13)		

Table 19: Associations between co-morbid diseases of the study subjects, current medication use, and current antibiotics use with practice level regarding antibiotics (Continued)

Parameters	Practice Level			Chi square	P-value
	Poor n (%)	Moderate n (%)	Good n (%)		
Current medication use within last 3 months				11.136	0.004*
- Yes	60 (19.74)	208 (68.42)	36 (11.84)		
- No	5 (5.95)	62 (73.81)	17 (20.24)		
Current antibiotics use within last 3 months				0.101	0.951
- Yes	7 (17.50)	27 (67.50)	6 (15.00)		
- No	58 (16.67)	243 (69.83)	47 (13.51)		

* Significant differences at p-value < 0.05

According to Table 19, there was significant association between co-morbid disease and practice level (p = 0.003). The study subjects who did not have co-morbid disease were more likely to practice regarding antibiotics better than the study subjects who had co-morbid disease. In addition, there was significant association between current medication use within last 3 months with the practice level (p = 0.004). The study subjects who used some medications within last 3 months tend to practice regarding antibiotics better than the study subjects who were not using any medication within last 3 months.

4.6 Associations between knowledge, attitude, and practice regarding antibiotics use

Table 20: Association between knowledge, attitude, and practice regarding antibiotics use

Variables	Practice			Chi square	p-value
	Poor n (%)	Moderate n (%)	Good n (%)		
Knowledge				32.767	< 0.001*
- Low	26 (38.24)	41 (60.29)	1 (1.47)		
- Moderate	19 (12.03)	114 (72.15)	25 (15.82)		
- High	20 (12.35)	115 (70.99)	27 (16.67)		
Attitude				124.947	< 0.001*
- Poor	39 (62.90)	23 (37.10)	0 (0.00)		
- Moderate	24 (8.33)	222 (77.08)	42 (14.58)		
- Good	1 (3.12)	20 (62.50)	11 (34.38)		

* Significant differences at p-value < 0.05

According to Table 20, there was significant association between knowledge and practice regarding antibiotics use ($p < 0.001$). The study subjects who had higher knowledge level were more likely to had better practices regarding antibiotics use. There was significant association between attitude and practice regarding antibiotics use ($p < 0.001$). The study subjects who had higher attitude level were more likely to have better practice regarding antibiotics use.

4.7 Correlations between knowledge, attitude, and practice regarding antibiotics use

Table 21: Correlations between knowledge, attitude, and practice regarding antibiotics use

Variables	Knowledge	Attitude	Practice
Knowledge	1.000	0.088 (p = 0.083)	0.204** (p < 0.001)
Attitude	-	1.000	0. 474** (p < 0.001)
Practice	-	-	1.000

** Correlation is significant at the 0.01 level (2-tailed)

According to Table 21, Spearman's rho was used to determine correlations between variables. There was very weak positive correlation between knowledge and attitude level but there was not statistically significant (r = 0.088, p= 0.083). There was significant weak positive correlation between knowledge and practice regarding antibiotics use (r = 0.204, p < 0.001). The study subjects who had higher knowledge score were more likely to have better practice regarding antibiotics use. There was significant moderate positive correlation between attitude and practice regarding antibiotics use (r = 0.474, p < 0.001). The study subjects who had better attitude level were more likely to have better practice regarding antibiotics use.

CHAPTER V

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

The present study was a descriptive cross-sectional study concerning knowledge, attitudes, and practices regarding antibiotics use in Kuanthani subdistrict, Kantang district, Trang province, Thailand. According to the questionnaire constructed by the researcher from various books and research papers applicable questionnaire items, after the Thesis Committee approval, systematic random sampling with proportional to size of the villages in Kuanthani subdistrict were completed. The overall sample size was 396 study subjects. The tool for data collection was a self-administered questionnaire which was pretested in 33 samples from Kuan Pring Subdistrict, Muang District, Trang province. The pretest results were used to adapt and develop the questionnaire until arrived with satisfactory Kuder-Richardson 20 and Cronbach alpha reliability test score. The data was analyzed by Statistical Package for the Social Science (SPSS) version 17 licensed for Chulalongkorn University, for arrived at descriptive and inferential statistics.

5.1.1 Socio-demographic characteristics, co-morbid diseases and current medication uses

Regarding socio-demographic characteristics of the study subjects, most of the study participants were female (74.49%), almost half of them were belong to the age group 18-29 years old (45.20%), most of them were Buddhism (74.75%), around half of them were married (50.25%), the majority finished secondary school or vocational school (31.25%), worked in non-agricultural sector (68.18%), had monthly income less than 7,000 Baht (42.97%), had no underlying diseases (71.97%), and currently used some medication within last 3 months (78.03%), respectively. For those 8

people who replied “Other” in “Occupation” question, they are 6 housewives, and the rest are not currently working.

There were 41 study subjects (10.35%) who had hypertension, 33 subjects (8.33%) who had diabetes mellitus, 9 subjects (2.27%) who had heart disease, 19 subjects (4.80%) who had hyperlipidemia, 15 subjects (3.79%) who had peptic ulcer disease, 30 subjects (7.58%) who had allergy, 10 subjects (2.53%) who had asthma, 14 subjects (3.54%) who had headache, and 6 subjects (1.52%) who had other disease as co-morbid disease. This data demonstrated that most of the study subjects are healthy and have no co-morbid diseases. For those 6 people who replied “Other” in disease question, they are 2 people with blood-related disease such as low platelet count, and 2 people are having tuberculosis (TB), and the rest leave blank in the space provided in the questionnaire.

There were 40 subjects (10.10%) who used antibiotics within last 3 months, 230 subjects (58.08%) who used analgesics and antipyretic drugs, 88 subjects (22.22%) used vitamins, 24 subjects (6.06%) used contraceptives, 61 subjects (15.40%) used chronic medication, and 20 subjects (5.05%) used other medication within last 3 months. The medication study subjects used the most within last 3 months were analgesics and antipyretic drugs (58.08%). Follow by vitamins (22.22%), and chronic medication (15.40%). This data showed that the majority of the study population use analgesic and antipyretic drugs. For those who replied “Other” in medicine question, some are using bronchodilators, blood-related drugs, antihistamines, cough suppressants, and herbal remedies.

Around 10 per cent (10.10%) of the study subjects used antibiotics within last 3 months and the most mentioned antibiotics by the respondents is Amoxicillin. This finding is the same as the finding from research in Greece by Skliros, et al. (2010) and the research in Indonesia by Widayati, et al. (2011) that Amoxicillin was the most mentioned antibiotics by the study participants. But the research in Sweden by by Svensson, Haaijer-ruskamp and Lundborg, 2004 found that the most mentioned antibiotics medication by the study participants was Penicillin V.

5.1.2 Knowledge about antibiotics

The majority (41.16%) of the study subjects had high knowledge level. The moderate knowledge level was 40.91% and low knowledge level was 17.93%, respectively. The mean knowledge score was 10.43 $\pm$ 2.84. The maximum knowledge score was 16. The minimum knowledge score was 3. Regarding knowledge questions, the majority (62.37%) of the study subjects gave right answer to statement indicating correct antibiotic indication “Antibiotics is the medicine to treat bacterial infection”, while 37.63% gave wrong answer to this statement, implies that there are still some misconceptions about antibiotics in the study populations. This finding is in the same direction as the study in Malaysia by Oh et al. (2011) that the majority of the subjects (76.7%) could correctly identify that antibiotics are indicated for the treatment of bacterial infections.

However, Oh et al. (2011) also found that 67.2% of the study subjects incorrectly thought that antibiotics are also indicated to treat viral infections. This finding is in the same aspect as the researcher. There were 44.19% of respondents who misunderstood that “Antibiotics is the medicine to treat viral infection, such as cold and flu”. That is almost half of the respondents who have wrong knowledge. Maybe this is because they mostly experienced when they got common cold or flu and they were more likely to receive antibiotics. When they had treatment from health care facilities, such as hospitals, clinics, and drug stores, health care professionals might give them antibiotics when they got a common cold or flu. The findings from South Korea by Kim et al. (2011) also indicated that only 31% of the study subjects can correctly answered that antibiotics cannot kill virus. In addition, the finding from Jordan by Shehadeh et al. (2011) found that 67.1% of the respondents believed that antibiotics can treat common cold and cough.

The knowledge questions item 2 – 6 are the wrong indications of antibiotics, such as antibiotics can treat muscle pain and inflammation, can reduce fever, can treat viral infection and fungal infection. There were around half of the respondents (58.59%) who misunderstood that “Antibiotics is the medicine to treat muscle pain

and inflammation from hard work or sport injury", while 41.41% have appropriate knowledge that is not the right indication of antibiotics. This statement shows that the majority of the respondents are still understand that antibiotics are the medicine to help relieve any kind of inflammation. Maybe this is because antibiotics in local Thai language called "Ya Kae Aksep" or anti-inflammatory drug in English. The respondents may link the antibiotics with other anti-inflammatory drugs, which includes NSAIDs and steroids, of which are used to treat muscle pain and inflammation. And maybe the study respondents do not aware that there are differences between inflammations caused by bacteria and by other causes. The study in Jordan by Shehadeh et al. (2011) also found that 28.1% of the study respondents misused antibiotics as analgesics and anti-inflammatory drugs.

There were 81.31% of respondents who gave right answer to the statement "One can take antibiotics to reduce fever", while 18.69% of the respondents gave wrong answer to this statement. There were 63.89% of respondents who gave right answer to the statement "Antibiotics is the medicine to treat fungal infection, such as Hong Kong foot", while 36.11% of the respondents have wrong knowledge. There were 56.31% of respondents who gave right answer to the statement "Antibiotics can treat any infections", while 43.69% of the respondents misunderstood that statement.

5.1.3 Attitudes towards antibiotics

The majority (75.13%) of the study subjects had moderate attitude level, follow by 65 subjects (16.67%) with poor attitude level, and 32 subjects (8.21%) with good attitude level, respectively. The mean attitude score was 2.49 $\pm$ 0.39. The maximum attitude score was 3.00; the minimum attitude score was 1.27. There are inappropriate attitudes towards antibiotics in many ways. The study by Shehadeh et al. (2011) found out that 67.1% of the respondents believed that antibiotics can treat common cold and cough. Cespades and Larson (2006) also found that their study participants were inaccurately believe that antibiotics help treat viral infections. You

et al. (2008) found that 26% of the respondents believed that antibiotics were need for common cold. Kim et al. (2011) found that 48.2% of the study participants believed that antibiotics help them recover from a common cold more quickly. Vanden Eng et al. (2003) found that 27% of the respondents believed that taking antibiotics when they had a cold made them better more quickly, and 32% believed that taking antibiotics when they had a cold prevented more serious illness. Belongia et al. (2002) also reported that many respondents believed that they knew when an antibiotic was needed for themselves before they went to see doctor. Belongia et al. (2002) also reported that patients often have misconceptions regarding antibiotic use, and most expect to receive an antibiotic for viral respiratory illness. The study from Malaysia by Oh et al. (2011) also reported that 38% of the respondents believed that taking antibiotics when they have cold symptoms could help recovery faster, while 47.3% expected antibiotics to be prescribed for common cold symptoms. Those findings are similar to the researcher's finding that 22.22% of the respondents believed that one should start taking antibiotics as soon as possible when the symptom of sore throat or fever starts to develop. Also, 13.38% of the respondents believed that when they start to feel unwell they should take antibiotics as soon as possible to prevent more symptoms. In addition, 25% of the respondents believed that was boring to finish the whole antibiotics course when their symptom is getting better. Around 13% of the respondents had attitudes that they need to take antibiotics every time whenever they are not feeling well.

5.1.4 Practice regarding antibiotics use

The study by Sirirasamee (1997) in Nakornpathom province, Thailand found that the inappropriate practice regarding antibiotics use such as; using antibiotics without accurate indication, buying antibiotics from grocery store, too short interval between taking food and antibiotics, incomplete antibiotics dose, and no observation of drug expiratory date. This finding by Sirirassamee, 1997 were also in the same way of the researcher's finding as well. Some of the study subjects inaccurately practice

regarding antibiotics use in many aspects. Around one-third (37.37%) of the study respondents took antibiotics some time that they started to feel unwell, while 1.01% said that they always took antibiotics when they start to feel unwell.

Kim et al. (2011) found that 30% of the study participants said that they had requested antibiotics for treating a cold. In addition, the researcher's finding was similar which 18.43% of the respondents request their doctor or healthcare professional to give antibiotic injection for relieving illness.

Around half of the respondents (58.48%) sometimes or never took antibiotics 30 minutes to 1 hour before meal. This is similar to Sirirassamee, 1997 which indicated the problem of too short interval between taking food and antibiotics. Because most antibiotics require empty stomach condition to receive better absorption.

Also, 13.90% of the respondents took antibiotics without looking for the label information, while 18.19% sometimes or never read the manufacturing date and expiry date of the antibiotics they were going to take.

You et al. (2008) reported that 8% of the respondents share their antibiotics with family members. This is similar with the researcher's finding that 2.28% always and 27.85% sometimes share antibiotics that make their symptoms better to others that experienced the same symptoms to try. Also, 20.2% of the respondents requested to share some antibiotics from person who have experienced the same symptoms as they were in that time.

Kim et al. (2011) reported that 77.6% of the respondents stop taking antibiotics when they feel better. This is similar with the researcher's finding that 65.06% of the respondents stop taking antibiotics as soon as their symptoms were relieved. In addition, the finding from Skliros et al. (2010) also said that 31.5% of the respondents had earlier cessation of antibiotics when their symptoms were subside.

Morgan et al. (2011) found out that many of antibiotics are sold without prescription or professional consultation, also non-prescription use and self-medication were common for non-bacterial infections. Buke et al. (2003) also reported that 45.8% of the respondents self-medication with antibiotics. This is similar with the researcher's finding about self-medication with antibiotics in study respondents. Around one-third (33.84%) of the respondents self- medicate by telling the trade name that they prefer. Thirty-six point eight percent of the respondents self-medicate by bringing old antibiotics packaging or the sample of used antibiotics that succeeded their illness to seek for. The research findings from Sumpradit, 2010 also in the same direction that 70 – 80% of study subjects from Bangkok, Thailand self-medicated with antibiotics, while 40 – 60% of the study subjects from another provinces self-medicated with antibiotics. In addition, Marnous, Diaz, and Carnermolla (2008) also found out that many study participants suggested self-medicating was the preferable option to going to the doctor. Cespades and Larson (2006) also found out that their participants chose self-medication because of financial and socio-cultural barriers. But this findings are in contrary with the finding from Widayati et al. (2011) that only 7.3% of the respondents practice self-medication.

Shehadeh et al. (2011) also found out that 51.8% of the respondents used antibiotics based on a relative advice. This is similar to the researcher's finding that 19.19% of the respondents took antibiotics by suggestions from their friends, family, or the person they know. In addition, 18.48% of the respondents bought antibiotics by suggestions from advertisement in television, radio, newspaper and internet.

About leftover antibiotics and home stock for emergency or future use issues, they are many research findings that indicate such practice. Skliros et al. (2010) found out that leftover antibiotics medicine at home was among one of the major source of antibiotics the study respondents were using. Shehadeh et al. (2011) found that 49% of the respondents used leftover antibiotics, and 28.5% kept some unconsumed antibiotics at home for emergency use. Tan et al. (2006) found out that 21.5% of the respondents used leftover antibiotics, and 31% used unfinished previously prescribed

antibiotics first before they were going to see the doctor. Kim et al. (2011) found out that 46.9% of the respondents took unconsumed antibiotics. These findings are similar with the researcher's finding that 33.84% of the respondents used leftover antibiotics and 29.95% kept stock some antibiotics at home in case of emergency.

5.2 Conclusion

Regarding knowledge, attitudes, and practices, the study participants have inadequate knowledge, inappropriate attitudes, and incorrect practices towards antibiotics in many ways.

There are significant associations between practice with gender, age, education, occupation and monthly income. There is weak positive correlation between knowledge and attitude regarding antibiotics use ($p < 0.001$). The study subjects who have higher knowledge score are more likely to have better attitudes regarding antibiotics use. There is weak positive correlation between knowledge and practice regarding antibiotics use ($p < 0.001$). The study subjects who have higher knowledge score are more likely to have better practice regarding antibiotics use. There is moderate positive correlation between attitude and practice regarding antibiotics use ($p < 0.001$). The study subjects who have higher attitude level are more likely to have better practice regarding antibiotics use.

5.3 Recommendation

Recommendations for researchers who wish to study further regarding this topic are in following orders.

The measurement tool, which is self-administered pretested questionnaire, the question regarding occupation would be better if include "housewife" and "unemployed person" as one of the occupation categories. The question regarding

monthly income would be better if include “no income” as one of the monthly income categories. The questions regarding attitude part and practice part, it would be better if the questions are grouped together to make only one or two questions per each category and the questions are less than the statement items in the present questionnaire. The negativity of the questionnaire item is the issue to concern also. It should equal between positive attitude statement and negative attitude statement.

The recommendation for this study could be the public policy to increase knowledge and awareness regarding antibiotics. Because some of the study participants still have wrong knowledge about antibiotics, especially correct indication of antibiotics. Some of them still have knowledge that antibiotics can treat inflammations other than inflammations caused by bacteria. And some of them have knowledge that antibiotics can kill virus that caused cold and flu. The author thinks that if the knowledge about antibiotics is increasing, then antibiotics awareness is also increasing, then people will use antibiotics more appropriately.

Such policies to increase antibiotics knowledge may include early education in the primary or secondary school level to create good basics for Thai children on how to use medicine wisely. Another suggested policy may include mass media advertisement by the Ministry of Public Health. The advertisement may express in the television, radio, internet, or newspaper media. The story of advertisement must include appropriate antibiotics indication, and how to treat oneself without taking antibiotics in common cold or flu. The message conveyed by the advertisement should include self-medication with Thai herbal medicines such as Andrographis herb and other medicine but not using antibiotics at the first 1-2 days of common cold symptoms.

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APPENDICES

APPENDIX A

QUESTIONNAIRE IN THAI

เลขที่แบบสอบถาม .....

แบบสอบถามการวิจัย เรื่อง

การประเมินความรู้ ทัศนคติ และการปฏิบัติตัวเกี่ยวกับการใช้ยาปฏิชีวนะ

ในตำบลควนธานี อำเภอกันตัง จังหวัดตรัง ประเทศไทย

แบบสอบถามฉบับนี้มีวัตถุประสงค์เพื่อศึกษาความรู้ ทัศนคติ และการปฏิบัติตัวเกี่ยวกับการใช้ยาปฏิชีวนะของประชาชนในตำบลควนธานี อำเภอกันตัง จังหวัดตรัง ซึ่งคำว่า “ยาปฏิชีวนะ” นั้น ท่านอาจจะคุ้นเคยหรือรู้จักกันในชื่อว่า “ยาแก้อักเสบ” โดยแบบสอบถามมีทั้งสิ้น 7 หน้า แบ่งออกเป็น 4 ส่วน ดังนี้

ส่วนที่ 1 ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม จำนวน 9 ข้อ

ส่วนที่ 2 ความรู้เกี่ยวกับการใช้ยาแก้อักเสบ จำนวน 16 ข้อ

ส่วนที่ 3 ทัศนคติต่อการใช้ยาแก้อักเสบ จำนวน 15 ข้อ

ส่วนที่ 4 การปฏิบัติตัวในการใช้ยาแก้อักเสบ จำนวน 27 ข้อ

โปรดตอบแบบสอบถามนี้ตามความคิดเห็นและทัศนคติของท่านโดยไม่ต้องระบุชื่อและนามสกุล ข้อมูลจากการตอบแบบสอบถามนี้จะไม่มีผลกระทบต่อท่านแต่อย่างใดทั้งสิ้น ผู้วิจัยขอรับรองว่าจะเก็บรักษาข้อมูลของท่านไว้เป็นความลับอย่างยิ่งยวดและจะนำเสนอผลการศึกษาใน

ภาพรวมเท่านั้น คำตอบของท่านจะเป็นประโยชน์อย่างยิ่งต่อการนำไปประมวลผลและวิเคราะห์เพื่อเป็นแนวทางในการส่งเสริมสุขภาพของประชาชนในชุมชนต่อไป

ขอขอบพระคุณทุกท่านในการตอบแบบสอบถาม

ข้อมูลของผู้วิจัย นางสาวกาญจนชญา ศิริโชติ

นิสิตปริญญาโทสาธารณสุขศาสตร์มหาบัณฑิต วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย

สถานที่ทำงาน หลักสูตรเทคนิคเภสัชกรรม วิทยาลัยการสาธารณสุขสิรินธร จังหวัดตรัง

เบอร์โทรศัพท์ 075-263320-3 ต่อ 224, 081-8599377 Email: mandybkk@yahoo.com

ส่วนที่ 1 ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม

กรุณาเติมข้อความลงในช่องว่างและทำเครื่องหมาย / ลงใน À หน้าข้อความที่ตรงกับความเป็นจริง

ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม	**สำหรับผู้วิจัย**
1. เพศ 1. ชาย 2. หญิง	
2. อายุ 1. 18 – 29 ปี 2. 30 – 39 ปี 3. 40 – 49 ปี 4. 50 – 59 ปี 5. ตั้งแต่60 ปีขึ้นไป	
3. ศาสนา 1. พุทธ 2. อิสลาม 3. คริสต์ 4. อื่นๆ (โปรดระบุ) …	
4. สถานภาพ 1. โสด 2. สมรส 3. หม้าย/หย่าร้าง/แยกกันอยู่	
5. ระดับการศึกษา 1. น้อยกว่าประถมศึกษา 2. ประถมศึกษา 3. มัธยมศึกษา 4. ปวช. 5. ปวส./อนุปริญญา 6. ปริญญาตรี 7. สูงกว่าปริญญาตรี 8. อื่นๆ (โปรดระบุ)	
6. อาชีพ 1. เกษตรกรรม 2. ค้าขาย/ธุรกิจส่วนตัว 3. รับจ้างทั่วไป/แรงงาน 4. ข้าราชการ/รัฐวิสาหกิจ 5. ลูกจ้าง หน่วยงานของรัฐ/เอกชน 6. นักเรียน/นักศึกษา 7. อื่นๆ (ระบุ)	
7. รายได้ต่อเดือน (บาท) 1. รายได้น้อยกว่าหรือเท่ากับ 3,000 บาท 2. รายได้ 3,001 – 7,000 บาท 3. รายได้ 7,001 – 10,000 บาท 4. รายได้ 10,001 – 20,000 บาท 5. รายได้ 20,001 – 30,000 บาท	

6. รายได้มากกว่า 30,000 บาทขึ้นไป	
ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม	**สำหรับผู้วิจัย**
8. โรคประจำตัวของท่าน (ตอบได้มากกว่า 1 ข้อ) 1. ไม่มีโรคประจำตัว 2. โรคความดันโลหิตสูง 3. โรคเบาหวาน 4. โรคหัวใจ 5. โรคไขมันในเลือดสูง 6. โรคกระเพาะอาหาร 7. โรคภูมิแพ้ 8. โรคหอบหืด 9. โรคปวดศีรษะ 10. อื่นๆ (โปรดระบุ)	
9. ในระยะเวลา 3 เดือนที่ผ่านมา ท่านใช้ยาชนิดใดต่อไปนี้บ้าง (ตอบได้มากกว่า 1 ข้อ) 1. ไม่ได้ใช้ยาใด 2. ยาแก้ปวด ลดไข้ คลายเส้น 3. ยาบำรุงร่างกาย วิตามิน 4. ยาคุมกำเนิด 5. ยารักษาโรคเรื้อรัง เช่น เบาหวาน ความดัน ไขมันสูง หัวใจ 6. ยาแก้อักเสบ (โปรดระบุชื่อยา) …… 7. อื่นๆ (โปรดระบุ)	

ส่วนที่ 2 ความรู้เกี่ยวกับการใช้ยาแก้อักเสบ

โปรดตอบคำถามเกี่ยวกับความรู้ในการใช้ยาแก้อักเสบตามความคิดของท่าน โดยกาเครื่องหมาย / ลงในช่องคำตอบเพียงหนึ่งคำตอบ โดยคำว่า

"ถูกต้อง" คือ ข้อความที่ท่านเห็นว่าถูกต้อง

"ผิด" คือ ข้อความที่ท่านเห็นว่าไม่ถูกต้อง

"ไม่ทราบ" คือ ข้อความที่ท่านไม่ทราบว่าถูกต้องหรือไม่ถูกต้อง

ข้อ	ข้อความ	ถูกต้อง	ผิด	ไม่ทราบ
1	ยาแก้อักเสบเป็นยาที่ใช้รักษาโรคที่เกิดจากการติดเชื้อแบคทีเรีย			
2	ยาแก้อักเสบสามารถใช้รักษาอาการปวดเนื่องจากการอักเสบของกล้ามเนื้อจากการทำงานหนักหรือเล่นกีฬาได้			
3	ยาแก้อักเสบเป็นยาที่ใช้รักษาโรคหวัดที่เกิดจากเชื้อไวรัส			
4	ยาแก้อักเสบสามารถใช้รับประทานเพื่อลดไข้ได้			
5	ยาแก้อักเสบสามารถใช้รักษาโรคที่เกิดจากเชื้อรา เช่น น้ำกัดเท้า ฮ่องกงฟุต			
6	ยาแก้อักเสบสามารถใช้รักษาโรคติดเชื้อได้ทุกชนิด			
7	ต้องรับประทานยาแก้อักเสบอย่างต่อเนื่องตามแพทย์หรือเภสัชกรแนะนำจนยาหมด แม้ว่าอาการจะดีขึ้นแล้ว			

8	ยาแก้อักเสบที่รับประทานไม่หมดสามารถเก็บเอาไว้ใช้ต่อในคราวหน้าได้			
9	ไม่ควรใช้น้ำร้อนผสมยาแก้อักเสบแบบผงสำหรับเด็ก เพราะจะทำให้ยาเสื่อมสภาพ			
10	อาการข้างเคียงเมื่อรับประทานยาแก้อักเสบ เช่น อาการคลื่นไส้ อาเจียน ท้องเสีย			
11	อาการแพ้ยาแก้อักเสบ เช่น มีผื่นขึ้น ปากและตาบวม ใจสั่น แน่นหน้าอก หายใจไม่ออก			
12	การรับประทานยาแก้อักเสบไม่ครบตามจำนวนที่กำหนดให้ใช้รักษาเป็นสาเหตุให้เชื้อโรคดื้อยาได้			
13	เมื่อเกิดการดื้อยาชนิดหนึ่งแล้ว ท่านจะไม่สามารถใช้ยาชนิดนั้นในการรักษาอาการติดเชื้อได้อีกต่อไป			
14	เมื่อรับประทานอาหาร เครื่องดื่ม หรือเหล้า เบียร์ ร่วมกับการรับประทานยาแก้อักเสบ จะส่งผลให้ยาออกฤทธิ์ได้ลดลง			
15	ความร้อนและแสงอาทิตย์สามารถทำลายตัวยาแก้อักเสบให้เสื่อมสภาพได้			
16	ยาแก้อักเสบแบบผงสำหรับเด็ก เมื่อผสมน้ำแล้วสามารถเก็บไว้ในอุณหภูมิห้อง โดยไม่ต้องแช่ตู้เย็น ได้ไม่เกิน 7 วัน			

ส่วนที่ 3 ทัศนคติต่อการใช้ยาแก้อักเสบ

โปรดตอบคำถามเกี่ยวกับทัศนคติในการใช้ยาแก้อักเสบตามความคิดของท่าน โดยกาเครื่องหมาย / ลงในช่องคำตอบเพียงหนึ่งคำตอบ โดยคำว่า

"เห็นด้วยอย่างยิ่ง" คือข้อความที่ท่านรู้สึกเห็นด้วยอย่างเต็มที่

"เห็นด้วย" คือข้อความที่ท่านรู้สึกเห็นด้วย

"เฉยๆ" คือข้อความที่ท่านรู้สึกเฉยๆ

"ไม่เห็นด้วย" คือข้อความที่ท่านรู้สึกไม่เห็นด้วย

"ไม่เห็นด้วยอย่างยิ่ง" คือข้อความที่ท่านรู้สึกไม่เห็นด้วยแต่อย่างใด

ข้อ	ข้อความ	เห็นด้วยอย่างยิ่ง	เห็นด้วย	เฉยๆ	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
1	ท่านเห็นว่า การซื้อยาแก้อักเสบชนิดเดิมที่เคยใช้แล้วได้ผลดีมากินเองเป็นสิ่งที่ควรทำเพราะช่วยประหยัดค่าใช้จ่าย					
2	ท่านเห็นว่า การซื้อยาแก้อักเสบชนิดเดิมที่เคย					

	ใช้แล้วได้ผลดีมากินเองเป็นสิ่งที่ควรทำเพราะจะไม่เสียเวลาในการไปโรงพยาบาลหรือคลินิก					
3	ท่านเห็นว่า การฉีดยาแก้อักเสบจะทำให้โรคหายเร็วกว่าการกินยาแก้อักเสบ					
4	ท่านเห็นว่า เมื่อมีอาการเจ็บป่วยไม่สบายไม่ว่าจะมากหรือน้อยก็ต้องกินยาแก้อักเสบทุกครั้ง					
5	ท่านเห็นว่า การกินยาแก้อักเสบต่อจนหมดแม้ว่าอาการจะหายดีแล้วเป็นเรื่องที่น่าเบื่อ					
6	ท่านเห็นว่า เมื่อรู้สึกไม่สบายแม้เพียงเล็กน้อยก็ควรรีบกินยาแก้อักเสบทันทีเพื่อป้องกันไม่ให้อาการรุนแรงขึ้น					
7	ท่านเห็นว่า การเจ็บป่วยที่มีอาการคล้ายกันสามารถรักษาด้วยยาแก้อักเสบชนิดเดียวกันได้โดยไม่ต้องปรึกษาแพทย์					
8	ท่านเห็นว่า ยาแก้อักเสบแบบแคปซูลสามารถแกะเอาผงยามาใช้โรยแผล ฝี และหนองเพื่อฆ่าเชื้อได้					
9	ท่านรู้สึกไม่พอใจถ้าแพทย์หรือเภสัชกรไม่จ่าย					

	ยาแก้อักเสบตัวที่ท่านต้องการ					
10	ท่านเห็นว่า การใช้น้ำร้อนผสมยาแก้อักเสบแบบผงสำหรับเด็กเพื่อช่วยให้ตัวยาละลายได้ง่ายและออกฤทธิ์ได้ดี					
11	ท่านเห็นว่า ผู้ป่วยควรปรึกษาแพทย์หรือเภสัชกร เพื่อให้สามารถใช้ยาแก้อักเสบได้เหมาะสมกับโรค					
12	เมื่อท่านหายจากอาการเจ็บป่วยแล้ว ท่านเห็นว่าไม่มีประโยชน์ที่จะรับประทานยาแก้อักเสบต่อจนหมด					
13	ท่านเห็นว่า ควรแบ่งยาแก้อักเสบที่ท่านใช้ได้ผลดีให้เพื่อนได้ใช้ด้วย					
14	ท่านเห็นว่า ควรรับประทานยาแก้อักเสบทันทีเมื่อเริ่มมีอาการเจ็บคอหรือมีไข้เพื่อป้องกันไม่ให้มีอาการมากขึ้น					
15	ท่านเห็นว่า ผู้ที่รับประทานยาแก้อักเสบแล้วไม่เคยมีอาการแพ้ยาเลยก็จะไม่แพ้ยาที่ใช้รักษาโรคอื่นๆเช่นกัน					

ส่วนที่ 4 การปฏิบัติตัวในการใช้ยาแก้อักเสบ

โปรดตอบคำถามเกี่ยวกับการปฏิบัติตัวในการใช้ยาแก้อักเสบตามที่ท่านได้เคยปฏิบัติ โดยกาเครื่องหมาย / ลงในช่องคำตอบเพียงหนึ่งคำตอบ โดยคำว่า

“ปฏิบัติสม่ำเสมอ/เป็นประจำ” หมายถึง ท่านปฏิบัติตัวตามข้อความนั้น มากกว่าครึ่งหนึ่งของเวลา

“ปฏิบัติบางครั้ง” หมายถึง ท่านปฏิบัติตัวตามข้อความนั้น ครึ่งหนึ่งถึงหนึ่งส่วนสามของเวลา

“แทบจะไม่/ไม่เคยปฏิบัติเลย” หมายถึง ท่านปฏิบัติตัวตามข้อความนั้น น้อยกว่าหนึ่งส่วนสามของเวลา

ข้อ	ข้อความ	ปฏิบัติสม่ำเสมอ/เป็นประจำ	ปฏิบัติบางครั้ง	แทบจะไม่/ไม่เคยปฏิบัติเลย
1	ท่านใช้ยาแก้อักเสบทุกครั้งที่มีอาการเจ็บป่วยแม้เพียงเล็กน้อย			
2	ท่านฝากบุคคลอื่นซื้อยาแก้อักเสบมาให้			
3	ท่านค้นหายาแก้อักเสบที่มีเหลือเก็บอยู่ในบ้านมาใช้			
4	ท่านขอแบ่งยาแก้อักเสบจากบุคคลอื่นที่มีอาการคล้ายกันกับท่านมาใช้			

5	ท่านร้องขอให้แพทย์หรือบุคลากรทางการแพทย์ฉีดยาแก้อักเสบเพื่อบรรเทาอาการป่วยของท่าน			
6	ท่านซื้อยาแก้อักเสบใช้เองโดยระบุชื่อยาที่ท่านต้องการ			
7	ท่านซื้อยาแก้อักเสบใช้เองโดยนำตัวอย่างยาที่ใช้แล้วได้ผลดีไปหาซื้อ			
8	ท่านซื้อยาแก้อักเสบใช้เองจากคำแนะนำของเพื่อน ญาติพี่น้อง คนรู้จัก			
9	ท่านซื้อยาแก้อักเสบใช้เองโดยใช้ข้อมูลที่ได้จากโฆษณาในวิทยุ โทรทัศน์ นิตยสาร หนังสือพิมพ์ อินเตอร์เน็ต			
10	ท่านรับประทานยาแก้อักเสบโดยไม่อ่านฉลากยา			
11	ท่านอ่านชื่อตัวยาสำคัญและสรรพคุณของยาก่อนใช้ยาทุกตัว			
12	ท่านอ่านวันผลิตและวันหมดอายุที่เขียนไว้บนซองยาหรือกล่องยาแก้อักเสบก่อนรับประทานยา			
13	ท่านสังเกตลักษณะภายนอกของยาแก้อักเสบก่อนใช้ เช่น สี กลิ่น ตะกอน			
14	ท่านงด เหล้า เบียร์ และเครื่องดื่มที่มีแอลกอฮอล์ในระหว่างที่รับประทานยาแก้อักเสบ			
15	ท่านแบ่งยาแก้อักเสบที่ท่านใช้แล้วอาการดีขึ้นให้กับ			

	บุคคลอื่นที่มีอาการคล้ายกันกับท่านได้ทดลองใช้บ้าง			
16	ท่านเพิ่มปริมาณยาแก้อักเสบเองเพราะท่านต้องการให้หายป่วยเร็วขึ้น			
17	ท่านเพิ่มปริมาณยาแก้อักเสบเองเมื่อรู้สึกว่าอาการเจ็บป่วยของท่านไม่ดีขึ้น			
18	ท่านหยุดรับประทานยาแก้อักเสบทันทีเมื่อท่านอาการดีขึ้น			
19	ท่านทิ้งยาแก้อักเสบนั้นทันทีเมื่อยาเปลี่ยนสี หรือมีความชื้น			
20	ท่านเทผงยาแก้อักเสบออกจากแคปซูลหรือนำเม็ดยาไปละลายน้ำให้นิ่มก่อนรับประทาน			
21	ท่านเก็บสะสมยาแก้อักเสบชนิดต่างๆไว้ที่บ้าน เมื่อเกิดอาการเจ็บป่วยจะได้ใช้ยาได้ทันที			
22	เมื่อลืมรับประทานยาแก้อักเสบ ท่านจะรับประทานยาเพิ่มเป็นสองเท่าทันทีที่นึกขึ้นได้			
23	ท่านรับประทานยาแก้อักเสบก่อนอาหาร ก่อนที่ท่านจะรับประทานอาหารประมาณครึ่งถึงหนึ่งชั่วโมง			
24	ท่านสังเกตอาการผิดปกติหลังรับประทานยาแก้อักเสบ เช่น ผื่นคัน บวม คลื่นไส้อาเจียน หายใจลำบาก			

25	ท่านเก็บรักษายาแก้อักเสบไว้ในรถ			
26	ท่านเก็บรักษายาแก้อักเสบไว้ในห้องน้ำ			
27	ท่านเก็บรักษายาแก้อักเสบไว้ในห้องครัว			

ขอขอบพระคุณทุกท่านในการตอบแบบสอบถาม

APPENDIX B

QUESTIONNAIRE IN ENGLISH

Number …….

Assessment of Knowledge Attitudes and Practices regarding Antibiotics Use in Kuanthani subdistrict Kantang district Trang province Thailand

Please write or give a tick to complete the required field as follows.

Part 1 Socio-demographic characteristics	**For Researcher**
1. Gender 1. Male 2. Female	
2. Age …….years old	
3. Religion 1. Buddhism 2. Muslim 3. Christian 4. Other…….....	
4. Marital status 1. Single 2. Married 3. Widowed/Separated/Divorced	
5. Education 1. Below Primary school 2. Primary school 3. High school 4. Vocational/College 5. Bachelor degree 6. Master degree and above 7. Other …….	
6. Occupation 1. Agriculture 2. Merchant 3. Employee 4. Government officer 5. Business owner 6. Student 7. Other ……	
7. Monthly income (Baht) ≤ 3,000 Baht	

3,001-7,000 Baht 7,001-10,000 Baht 10,001-20,000 Baht 20,001-30,000 Baht > 30,000 Baht	
8. Co-morbid Disease 1. No disease 2. Hypertension 3. Diabetes mellitus 4. Heart disease 5. Dyslipidemia 6. Gastric ulcer 7. Allergic rhinitis 8. Asthma 9. Other ……	

Part 2 Knowledge about antibiotics

Please give a tick in the column best fits your opinion

1. "True" means the statement is correct
2. "False" means the statement is not correct
3. If you cannot decide, after doing your best, you may answer "Do not know"

No.	Statement	True	False	Do Not Know
1	Antibiotics is the medicine to treat bacterial infection			
2	Antibiotics is the medicine to treat muscle pain and inflammation from hard work or sport injury			
3	Antibiotics is the medicine to treat viral infection, such as cold and flu			
4	One can take antibiotics to reduce fever			
5	Antibiotics is the medicine to treat fungal infection, such as Hong Kong foot			
6	Antibiotics can treat any infections			
7	One must take all antibiotics dose until finish the recommended course by physician or pharmacist even though symptoms are better			
8	Unfinished antibiotics can be kept to use in the future			
9	One should not use hot water to dissolve pediatric antibiotics powder because hot water can destroy the efficacy of antibiotics			
10	Antibiotics side effects such as nausea, vomiting, and			

	diarrhea			
11	Symptoms of antibiotics allergy such as rash, eye and lip swollen, palpitation, difficulty breathing, shortness of breath			
12	Unfinished antibiotics dose is the cause for bacterial resistance			
13	After having a drug resistant, one will never use that antibiotics again for infection treatment			
14	Food, drinks, and alcohol, if taken together, can destroy the efficacy of antibiotics			
15	Heat and direct sunlight can damage antibiotics			
16	One can store dissolved pediatric antibiotics powder in the refrigerator not more than 7 days			

Part 3 Attitudes towards antibiotics

Please give a tick in the column best fits your opinion

No.	Statement	Strongly Agree	Agree	Neutral/ Unsure	Disagree	Strongly Disagree
1	You should buy same antibiotics that worked for you because it helps save more money					
2	You should buy same antibiotics that worked for you because it helps save time to visit clinic or hospital					
3	You think that having antibiotics injection can treat infection faster than oral antibiotics					
4	You think that you need to take antibiotics every time whenever you are not feeling well					
5	You think that it is boring to finish the whole antibiotics course when your symptom is getting better					
6	You think when you start to feel unwell you should take antibiotics as soon as possible to prevent more symptoms					
7	You think that when you have the same symptoms you can take the same antibiotics that worked for you without going to see a doctor					
8	You think that you can open antibiotics capsule to use the powder inside to treat wound infection					

9	You are not happy if your physician or pharmacist does not prescribe antibiotics that you request					
10	You think that hot water will help dissolve pediatric antibiotics powder and increase efficacy of the medicine					
11	You think that one should consult physician or pharmacist to help recommend appropriate antibiotics for their symptoms					
12	After you recover from an illness, you think that it is not useful to take the antibiotics until finished					
13	You think that one should share their antibiotics with their friends					
14	You think that one should start taking antibiotics as soon as possible when the symptom of sore throat or fever starts to develop					
15	You think that one who never allergic to antibiotics will never allergic to any other medicine					

Part 4 Practice regarding antibiotics use

Please give a tick in the column best fits your opinion

No	Statement	Always/ Usually	Some times	Rarely/ Never
1	You take antibiotics every time that you start to feel unwell			
2	You ask your friends, family or other people to buy antibiotics for you			
3	You search for leftover antibiotics in your house to use			
4	You request to share some antibiotics from person who have experienced the same symptoms as you			
5	You request your doctor or healthcare professional to give you antibiotic injection for relieving your illness			
6	You buy antibiotics yourself by telling the trade name that you prefer			
7	You buy antibiotics yourself by bringing old antibiotics packaging or the sample of used antibiotics that succeeded your illness to seek for			
8	You buy antibiotics yourself by suggestions from your friends, family, or the person you know			

9	You buy antibiotics yourself by suggestions from advertisement in television, radio, newspaper and internet			
10	You take antibiotics without looking for the label information on the sachet or the packaging first			
11	You read the label information, medicine name, and indication of antibiotics before taking it			
12	You read the manufacturing date and expiry date printed on sachet or box of antibiotics before taking it			
13	You observe the physical appearance of antibiotics such as color, flavor, and sedimentation before taking it			
14	You do not drink alcohol while taking antibiotics			
15	You distribute antibiotics that make your illness better to other person who have the same symptoms as you to try out			
16	You increase antibiotics dose by yourself because you want to get well as fast as you can			
17	You increase antibiotics dose by yourself because your symptoms are not getting better			
18	You stop taking antibiotics as soon as your			

	symptoms are relieved			
19	You discard any antibiotics that have changes in physical appearances such as color change or tablet/capsule getting wet			
20	You open antibiotics capsule to take the powder inside or dissolve antibiotics tablet with water before taking it			
21	You keep stock some antibiotics at home in case of emergency			
22	If you forget to take antibiotics once, next time you will double dose it by yourself			
23	You take antibiotics 30 minutes to one hour before meal			
24	You observe strange symptoms after taking antibiotics such as rash, swelling, nausea, vomiting, or shortness of breath			
25	You store antibiotics in the car			
26	You store antibiotics in the bathroom			
27	You store antibiotics in the kitchen			

Thank You For Your Valuable Time

APPENDIX C

SCHEDULE OF ACTIVITIES

Activities	Time Frame (In Year 2012-2013)										
	Jul 12	**Aug 12**	**Sep 12**	**Oct 12**	**Nov 12**	**Dec 12**	**Jan 13**	**Feb 13**	**Mar 13**	**Apr 13**	**May 13**
Review of literatures											
Proposal writing											
Proposal examination											
Field, research assistant preparation											
Ethical consideration											
Data collection											
Data analysis											
Report writing											
Thesis examination											
Thesis Presentation											
Publication											

APPENDIX D

BUDGET

Budget List	Price per unit (Baht)	Quantity	Total Price (Baht)
External hard disk drive for data storage	2,500	1	2,500
Photocopy: Books, Literature, Questionnaire, Thesis paper, Presentation slides, etc.	0.5	10,000 pages	5,000
Printing: HP LaserJet 1022 Printer Cartridge	2,000	1 cartridge	2,000
A4 papers for printing (1 pack consisted of 500 papers)	120	20 packs	2,400
Payment for research assistants (lump-sum)	5,000	2 assistants	10,000
Snack and drinks for participants	20	400	8,000
Gift for participants (pen/note book)	30	400	12,000
Car fuel	50	200 liters	10,000
Total			**49,900 Baht**

APPENDIX E

PRE-TEST RESULTS

After the proposal examination, with the approval of Thesis Committee, the pre-test was done for questionnaire reliability. The questionnaire was tested for validity and reliability before the actual field assessment. For reliability of questionnaires, pretest was conducted within similar characteristics as study subjects by using 33 adults age 18 years old and over from Kuan Pring subdistrict, Muang district, Trang province, Thailand. It was done to ensure that the study subjects clearly understand all the questionnaire items. The pre-test result was calculated using Kuder-Richardson 20 (KR-20) formula for dichotomous answers in knowledge section and Cronbach's alpha coefficient for reliability of attitude and practice sections. An alpha value of 0.7 or higher was acceptable for reliability test of questionnaire.

Knowledge Section

The pre-test questionnaires were calculated by hand to arrive at Kuder-Richardson-20 score. The Kuder-Richardson-20 score calculated for knowledge part was 0.881 for 16 items.

$$r_{KR20} = (K/K-1)\,(1 - \Sigma pq/S^2)$$

Which, r_{KR20} = Reliability of questionnaire

K = The length of the test = 16 questions

p = Respondents who correctly answer divided by all respondents

q = Respondents who had wrong answer divided by all respondents = 1 – p

S^2 = Variance

Which, $S^2 = [N \Sigma x^2 – (\Sigma x)^2] / N^2$

N = Number of respondents

= 33 respondents

Σx^2 = 5,200

Σx = 392

Σpq = 2.863

Therefore, $S^2 = (33)(5,200) – (392)^2 / 33 \times 33$

= (171,600 – 153,664) / 1,089

= 17,936 / 1,089

= 16.470

Therefore, $r_{KR20} = (16 / 16 – 1)(1 – 2.863 / 16.470)$

= (1.067) (0.826)

= 0.881

Attitude Section

The pre-test questionnaires were computed in the SPSS version 17.0 licensed for Chulalongkorn University to arrive at alpha value. The Cronbach's alpha coefficient score for attitude part at first was 0.583 for 18 items which was low in reliability. The deletion of item A3, A4, A10 was done to bring the Cronbach's alpha coefficient score to 0.707 for 15 items.

Reliability Statistics

Cronbach's Alpha	N of Items
.583	18

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
a1	64.58	42.064	.250	.562
a2	64.55	42.443	.198	.570
a3	63.73	44.892	-.039	.627
a4	63.91	43.523	.018	.617
a5	65.27	44.955	.095	.583
a6	63.58	41.502	.418	.544
a7	64.30	46.155	-.053	.609
a8	63.79	40.422	.369	.543
a9	63.73	46.392	-.060	.607
a10	63.85	44.633	.015	.605
a11	63.76	39.689	.417	.534
a12	64.12	42.985	.268	.562
a13	63.97	42.843	.169	.575
a14	63.00	44.438	.266	.569
a15	63.73	37.892	.614	.505
a16	63.21	42.110	.399	.549
a17	64.30	39.405	.409	.533
a18	63.48	40.070	.598	.524

The deletion of 3 attitude items, (A3, A4, and A10), therefore, arrived at desirable Cronbach alpha value. The deleted items were select to delete one item at a time to bring the Cronbach's alpha score higher.

Reliability Statistics

Cronbach's Alpha	N of Items
.707	15

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
a1	52.97	37.280	.224	.704
a2	52.94	37.059	.217	.706
a5	53.67	38.917	.175	.706
a6	51.97	36.468	.417	.682
a7	52.70	41.530	-.105	.745
a8	52.18	34.653	.434	.677
a9	52.12	40.047	.015	.727
a11	52.15	33.820	.495	.668
a12	52.52	38.070	.245	.700
a13	52.36	36.489	.259	.700
a14	51.39	38.934	.312	.697
a15	52.12	31.985	.719	.639
a16	51.61	35.809	.542	.672
a17	52.70	34.218	.429	.677
a18	51.88	35.297	.578	.667

Practice Section

The pre-test questionnaires were computed in the SPSS version 17.0 licensed for Chulalongkorn University to arrive at alpha value. The Cronbach's alpha coefficient score for practice part was 0.721 for 27 items.

Reliability Statistics

Cronbach's Alpha	N of Items
.721	27

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
p1	67.52	50.320	.470	.704
p2	67.33	49.604	.634	.697
p3	67.21	49.610	.596	.698
p4	67.03	51.780	.513	.709
p5	67.09	51.148	.447	.707
p6	67.42	49.502	.511	.700
p7	67.39	50.621	.422	.706
p8	67.30	50.468	.404	.706
p9	67.12	51.547	.439	.709
p10	66.94	49.246	.230	.718
p11	67.58	51.814	.187	.718
p12	67.45	50.756	.303	.710
p13	67.61	50.496	.347	.708
p14	67.24	50.752	.428	.706
p15	67.09	51.523	.473	.708
p16	66.88	53.422	-.022	.742
p17	67.18	51.403	.360	.710
p18	67.42	52.814	.146	.720

p19	67.12	44.735	.259	.731
p20	67.00	53.188	.250	.717
p21	67.33	50.604	.349	.708
p22	68.48	54.695	-.114	.764
p23	67.88	44.860	.390	.702
p24	67.73	53.330	.030	.729
p25	67.06	52.121	.396	.712
p26	67.00	52.500	.414	.713
p27	67.21	52.110	.298	.713

VITAE

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