ความรู้ ทัศนคติ และการปฏิบัติต่อการใช้อุปกรณ์ป้องกันตัวส่วนบุคคลของช่างจักสานเครื่องหวาย ณ หมู่บ้านการค้า อำเภอเคียนซง จังหวัดไทบินห์ ประเทศเวียดนาม

นาย คอง ดัท ตรัง

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรมหาบัณฑิต
สาขาวิชาพัฒนาระบบสาธารณสุข
วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2551

KNOWLEDGE, ATTITUDE, AND PRACTICE ON USING PERSONAL PROTECTIVE EQUIPMENT OF RATTAN CRAFTSMEN IN TRADE VILLAGE AT KIENXUONG DISTRICT, THAIBINH PROVINCE, VIETNAM

Mr. Cong Dat Truong

A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Public Health Program in Health Systems Development

College of Public Health Sciences

Chulalongkorn University

Academic Year 2008

Thesis Title:	KNOWLEDGE, ATTITUDE, AND PRACTICE ON USING PERSONAL PROTECTIVE EQUIPMENT OF RATTAN CRAFTSMEN IN TRADE VILLAGE AT KIENXUONG DISTRICT, THAIBINH PROVINCE, VIETNAM
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คอง แดท ตรัง : ความรู้ ทัศนคติ และการปฏิบัติต่อการใช้อุปกรณ์ป้องกันตัวส่วนบุคคลของช่างจักสานเครื่องหวาย ณ หมู่บ้านการค้า อำเภอเคียนซง จังหวัดไทบินห์ ประเทศเวียดนาม (KNOWLEDGE, ATTITUDE, AND PRACTICE ON USING PERSONAL PROTECTIVE EQUIPMENT OF RATTAN CRAFTSMEN IN TRADE VILLAGE AT KIENXUONG DISTRICT, THAIBINH PROVINCE, VIETNAM) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: อ.ดร. วัฒน์ สิทธิ์ ศิริวงศ์, 73 หน้า

ช่างจักสานเครื่องหวายที่ทำงานในขั้นตอนการกำจัดสีด้วยกำมะถันออกจากหวายในอุตสาหกรรมการทำเครื่องจักสานหวานในครัวเรือนจะได้รับการสัมผัสกับก๊าซซัลเฟอร์ไดออกไซด์ โดยตรงส่งผลให้เกิดปัญหาต่อสุขภาพมากมาย จุดประสงค์ของการศึกษานี้ประการแรก เพื่อประเมินระดับความรู้ ทัศนคติ และการปฏิบัติต่อการใช้อุปกรณ์ป้องกันตัวส่วนบุคคลของช่างจักสานเครื่องหวาย ณ หมู่บ้านการค้า อำเภอเคียนซง จังหวัดไทบินห์ ประเทศเวียดนาม ในการป้องกันตัวเองจากผลกระทบต่อสุขภาพจากการได้รับสัมผัสก๊าซซัลเฟอร์ไดออกไซด์ ประการที่สอง เพื่อเสนอข้อแนะนำและมาตรการในการลดปัญหาผลกระทบต่อสุขภาพจากการได้รับสัมผัสก๊าซซัลเฟอร์ไดออกไซด์ในขั้นตอนการกำจัดสีด้วยกำมะถัน ในการศึกษานี้ทำการศึกษาแบบภาคตัดขวางชนิดวิเคราะห์ โดยการสัมภาษณ์แบบตัวต่อตัวกับช่างจักสานเครื่องหวายจำนวน 403 คนจากหมู่บ้านการค้า อำเภอเคียนซง จังหวัดไทบินห์ ประเทศเวียดนาม ผลการศึกษาพบว่า ความรู้และทัศนคติที่เหมาะสมยังอยู่ในระดับต่ำ เท่ากับ 3.7% และ 4.2% ตามลำดับ เช่นเดียวกับการปฏิบัติต่อการใช้อุปกรณ์ป้องกันตัวส่วนบุคคล พบว่าเท่ากับ 29 % นอกจากนี้พบว่าความรู้มีความสัมพันธ์กับสัณฐานของชุมชน (การทดสอบแบบไคสแควร์, $p<0.05$) ได้แก่ กลุ่มอายุ เพศ ระดับการศึกษา และรายได้ของครัวเรือน ทักษะคติมีความสัมพันธ์กับกลุ่มอายุ (การทดสอบแบบไคสแควร์, $p<0.05$) และระดับการศึกษา (การทดสอบแบบไคสแควร์, $p<0.01$) ในขณะที่รายได้ของครอบครัวส่งผลต่อการปฏิบัติในการใช้อุปกรณ์ป้องกันตัวส่วนบุคคล (การทดสอบแบบไคสแควร์, $p<0.01$) นอกจากนี้ พบว่าช่างจักสานเครื่องหวายส่วนใหญ่ทราบว่าการเผากำมะถันก่อให้เกิดก๊าซพิษ มีเพียงบางคนเท่านั่นที่ทราบว่าเป็นก๊าซพิษซัลเฟอร์ไดออกไซด์ และ ช่างจักสานเครื่องหวายที่ถูกสัมภาษณ์ 91.6% ทราบอยู่แล้วว่า ขั้นตอนการกำจัดสีด้วยกำมะถันก่อให้เกิดอันตรายต่อสุขภาพ ผู้ถูกสัมภาษณ์ 80% ได้รับข้อมูลความรู้ข่าวสารจาก ครอบครัว เพื่อน เพื่อนบ้าน และเพื่อนร่วมงาน ผู้ถูกสัมภาษณ์ที่เหลือได้รับความรู้จากวิทยุ และจากการสัมภาษณ์เกี่ยวกับอาการเจ็บป่วยในปีที่ผ่านมานั้น พบว่า 71.2% ของผู้ถูกสัมภาษณ์ มีอาการป่วยได้แก่อาการไอ (93.4%) เจ็บคอ (52.3%) ตาแดง (27.2%)และ ที่เหลือเป็นการเจ็บป่วยเล็กน้อยอื่นๆ ได้แก่ คัดจมูก น้ำมูกไหล หายใจเป็นจังหวะสั้นๆ หืดหอบ การศึกษาครั้งนี้ได้เสนอข้อแนะนำ มาตรการและ แนวทางที่เหมาะสมในการลดปัญหาผลกระทบต่อสุขภาพแก่ช่างจักสานเครื่องหวาย ชุมชนจักสาน และภาครัฐที่เกี่ยวข้อง

สาขาวิชา พัฒนาระบบสาธารณสุข ลายมือชื่อนิสิต .....

ปีการศึกษา 2551 ลายมือ อ.ที่ปรึกษาวิทยานิพนธ์หลัก .....

5179102053 : MAJOR HEALTH SYSTEMS DEVELOPMENT
KEYWORDS : KAP SURVEY./RATTAN CRAFTSMEN./SULFUR DIOXIDE./ PERSONAL PROTECTIVE EQUIPMENT./

TRUONG CONG DAT : KNOWLEDGE, ATTITUDE, AND PRACTICE ON USING PERSONAL PROTECTIVE EQUIPMENT OF RATTAN CRAFTSMEN IN TRADE VILLAGE AT KIENXUONG DISTRICT, THAIBINH PROVINCE, VIETNAM. ADVISOR: WATTASIT SIRIWONG Ph.D., 73 pp

Craftsmen, working with rattan sulfur-bleaching process in household rattan industry have directly exposed to sulfur dioxide causing several adverse health problems. The aim of this study were (1) to assess the level of knowledge, attitude and practice on using personal protective equipment (PPE) of rattan craftsmen to protect them from health effect of sulfur dioxide and (2) to confer the recommendations and guidelines for decreasing health effect related to sulfur dioxide exposure in rattan sulfur-bleaching process. Using Cross-sectional analytic study, 403 rattan craftsmen from a trade village in Kienxuong district, Thaibinh province, Vietnam were interviewed by face to face questionnaire. The results indicated that the prevalence of good knowledge and appropriate attitude was low equal 3.7% and 4.2% respectively. The prevalence of using respirator was 29%. Furthermore, the knowledge was associated with socio-demographic characteristics (Chi-square test, $p<0.05$) such as age group, gender, level of education and family income. The attitude was associated with age group (Chi-square test, $p<0.05$) and level of education (Chi-square test, $p<0.01$), meanwhile family income associated with the respirator using (Chi-square test, $p<0.01$). Additionally, most of the craftsmen knew that burning sulfur causes a poisonous gas; only few of them knew exactly the name of the poisonous sulfur pollutants gas. 91.6% of the participants have known that rattan sulfur-bleaching process can cause harmful effect to their health, 80% of the participants received the knowledge information by family, friends, neighbors, and colleagues; while the left participants received from radio. Among 71.2% participants had at least one symptom during last year such as cough (93.4%), sore throat (52.3%), eyes red (27.2%), and the left symptoms including running nose or stuffy, shortness breath, wheezing. Eventually, the study proposed the appropriate recommendations, strategies, and guidelines to decrease health effects for individual craftsmen, community, and local government authorities.

Field of Study:	Health Systems Development	Student's Signature	
Academic Year:	2008	Advisor's Signature	S. Wattait

ACKNOWLEDGEMENTS

This thesis would not have been possible without the help and support of many people who directly and indirectly contributed their efforts to my study.

I would like to express my sincere gratitude and deep appreciation to my advisors, Dr. Wattasit Siriwong, Ph.D., for his untiring and invaluable efforts throughout his guidance with all his heart. I also would like to express my gratitude to Assist. Prof. Dr. Ratana Somrongthong, Dr. Robert Sedgwick Chapman and Professor Dr. Mark Gregory Robson for their useful comments to improve my thesis.

I also would like to thank Thailand International Development Cooperation Agency for generous financial support for all expenses of my graduate education and to Thai Fogarty ITREOH Center (NIH Grant D43 TW007849) for scholarship, partially financial support for implementation and completion of my thesis. I also would like to thank all my teachers and my colleagues in Thaibinh Medical University, especially to Assoc. Prof. Pham Ngoc Khai, Ph.D., Vice Rector of Thaibinh Medical University, Assoc. Prof. Pham Van Trong, Ph.D., Dean of Faculty of Public Health and Dr. Ngo Thi Nhu - Vice Head of Department of Environmental Health for their kindly help and useful comments throughout this study.

My thanks also go to all my classmates and friends in College of Public Health Sciences for their support and assistance during the study course.

Finally, I could not pursue the MPH degree without love, support and encouragement from my dearest wife and son.

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LIST OF ABBREVIATIONS

ATSDR	Agency for Toxic Substances and Disease Registry
CCOHS	Canada's National Occupational Health & Safety Resource
CDC	Centers for Disease Control and prevention
GDP	Gross Domestic Product
HSE	Health Safety Environment
ILO	International Labor Organization
KAP	Knowledge, Attitude, and Practice
NHS	National Health Service for Scotland
NIOSH	National Institute Occupational Safety and Health
OHS	Occupational Health Services
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
OSHC	Occupational Safety and Health Council
PELs	Permissible Exposure Limits
PPE	Personal Protective Equipment
ppm	parts per million
S	Sulfur
SO_2	Sulfur Dioxide
TCVN	Tieu chuan Viet Nam or Vietnamese standards
TDI	Texas Department of Insurance, United States
UniSA	University of South Australia
WHO	World Health Organization
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists
TLV	Threshold Limit Value

CHAPTER I

INTRODUCTION

1.1 Background and significance of the problem

Geography

Vietnam stretches along a 3,200-kilometer section of the South China Sea, extending from China in the north and to the Gulf of Thailand in the south. Vietnam shares borders with Laos and Cambodia in the west (See appendix A). The country's population, estimated at 87.4 million at the end of 2007, is growing at an average annual rate of 2.1 percent. Almost 80 percent of the people are based in the rural areas (WHO, 2007)

National economy and quality of life indicators

In last recent years, Vietnam's economy has been developing significantly due to the fact that the structure of the Vietnamese economy has changed dramatically as a result of the government's market liberalization policies. Changes have occurred in the composition of GDP and employment, the composition of foreign trade, and the direction of foreign trade and investment flows. Industry and services, which have been growing rapidly in recent years, increased their respective shares of the GDP to 32 percent and 43 percent by 1997, an increase from 23 percent and 38 percent in 1990. However, Vietnam's employment structure is typical for an agrarian economy, with 71 percent of the labor force still employed in the agriculture sector, 14 percent in industry and construction, and the remaining 15 percent in the service sector and of which most of the labor force is unskilled (Ministry of Labor, 2005). Besides, most of these labor force is not provided with knowledge of occupational safety and health which is a cross-disciplinary area concerned with protecting the safety, health and

welfare of people engaged in work or employment. As a secondary effect, occupational safety and health may also protect co-workers, family members, employers, customers, suppliers, nearby communities, and other members of the public who are impacted by the workplace environment (Wikipedia, 2008).

According to International Labor Organization report 2008, every year more than 2 million people die from occupational accidents or work-related diseases in the world. By conservative estimate, there are 270 million occupational accidents and 160 million cases of occupational diseases. Hazardous substances cause the deaths of an estimated 440,000 workers. Of these, asbestos alone kills some 100,000 workers worldwide each year (ILO, 2008). Whereas, the preventive medicine centers in the national occupational health network of Vietnam (Nguyen Duy Bao, 2008), reported that of 1,186,283 workers, the percentage of respiratory disease, ophthalmopathy, otolpathy, skin disease, and cancer were 31.7%, 6%, 2.2%, 2.4%, and 0.04%, respectively. While 3,818 cases of the occupational deafness was 16%.

In Vietnam approximately 60 percent of people in the proposed study area, the Thuong Hien trade village at Kienxuong District, Thaibinh Province, are working related to rattan handicraft. Most of the labor is unskilled and there are many hazards during the processing of rattan that labors are exposed to many chemicals and physical injuries as well. Many chemicals are used in various steps during the process like bleaching, bending, and molding. In particular, sulfur (S) is mainly used for bleaching in the form of sulfur dioxide (SO_2) which is a hazardous chemical and can cause the adverse health effect to craftsmen.

It is reported that in Vietnam, the rate of emission of SO_2 is increasing significantly, in 1990 it was 165.6 thousand metric tons and in 2000 it reached 255.9

thousand metric tons and this emission is mainly produced due to interrupted processes (boiling, bleaching, dyeing, etc.) and equipment leakage, a large amount of vapor and chemicals are emitted into the air in the working environment. Gases emitted during production can have a very significant impact on air quality and health (Vietnam country profile, 2006).

The annual Health report of Thuong Hien health station (2007), the number of workers who have diseases related to occupational diseases, accidents, and injuries are increasing. Therefore, this study aims to investigate the knowledge, attitude, and practice (KAP) on the using personal protective equipment of rattan craftsmen in Thuong Hien trade village, Kienxuong district, Thaibinh province, Vietnam, and also confers recommendations and guidelines in reducing adverse occupational health effect of the workers related to sulfur dioxide exposure in rattan bleaching process.

1.2 Research question of the study

What are knowledge, attitude and practice on using personal protective equipment among rattan craftsmen in Thuong Hien trade village, Kienxuong district, Thaibinh province, Vietnam and whether there is any association between socio-demographic characteristics and practice scores?

1.3 Purposes of the study

1. To assess the knowledge, attitude, and practice on using personal protective equipment of rattan craftsmen in the Thuong Hien trade village, Kienxuong district, Thaibinh province, Vietnam.

2. To confer the recommendations and guidelines for decreasing health effect related to sulfur dioxide in rattan bleaching process.

1.4 Benefits of the study

Understanding the knowledge, attitude, and practice on using personal protective equipment and give some recommendations and guidelines for using personal protective equipment of rattan craftsmen to protect rattan craftsmen from harmful health effect of sulfur dioxide.

1.5 Study area

The study area is Thuong Hien trade village, Kienxuong District, Thaibinh Province, Vietnam. Total area is 3.23 km^2. The population was approximately 6,388 people in 2008. Total household is 1,602. According to a report of Thuong Hien trade village (2008) there are 58.6% household doing with rattan handicraft.

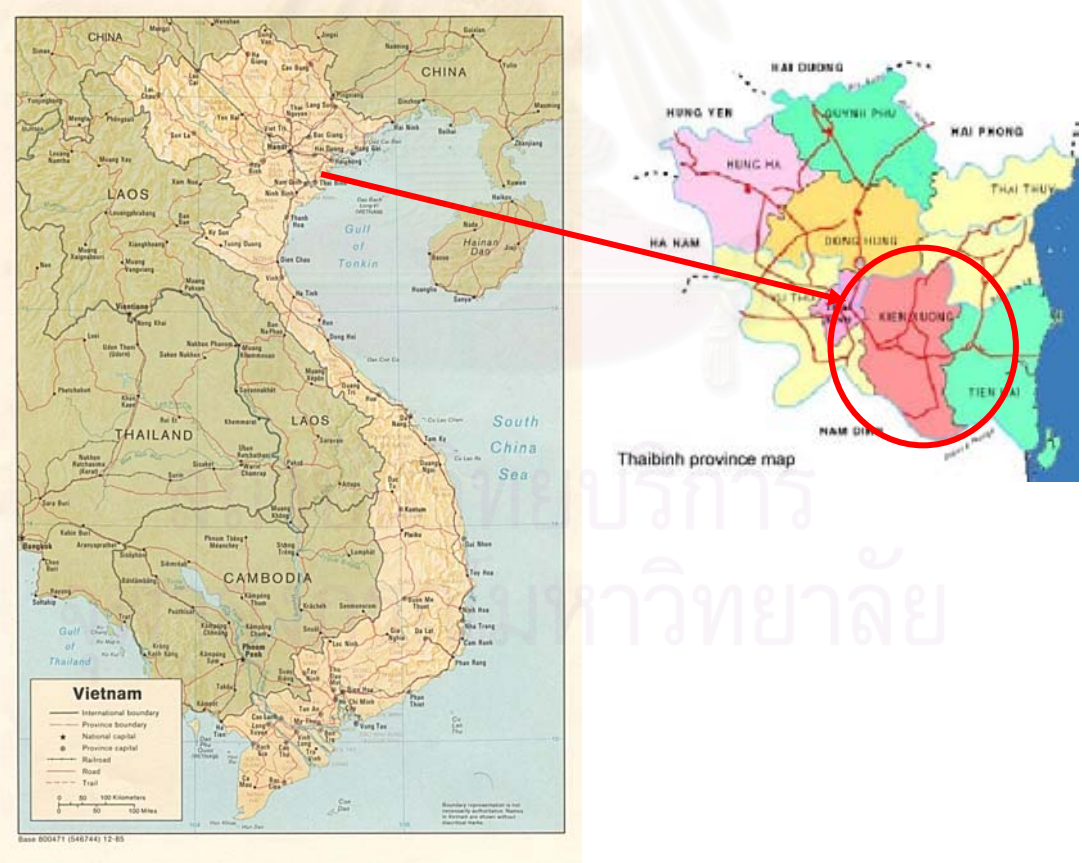

Figure1 The map of study area located at Kienxuong district, Thaibinh Province, Vietnam

1.6 Variables in the study

1.6.1 Independent variables

- Socio demographic

General characteristics concentrated on gender, age, education level, monthly family income, exposure to sulfur compound of the rattan craftsmen.

- Knowledge

Knowledge towards health effect of sulfur dioxide, type of personal protective equipment the craftsman should do, and how to prevent themselves from health effect of sulfur dioxide in their work.

- Attitude

Attitude is perceived susceptibility, severity, benefit, and barrier of using PPE in rattan bleaching process.

1.6.2 Dependent variables

- Practice

Practice about what they do to prevent themselves from health effect of sulfur dioxide and how they use PPE on their work.

1.7 Conceptual framework

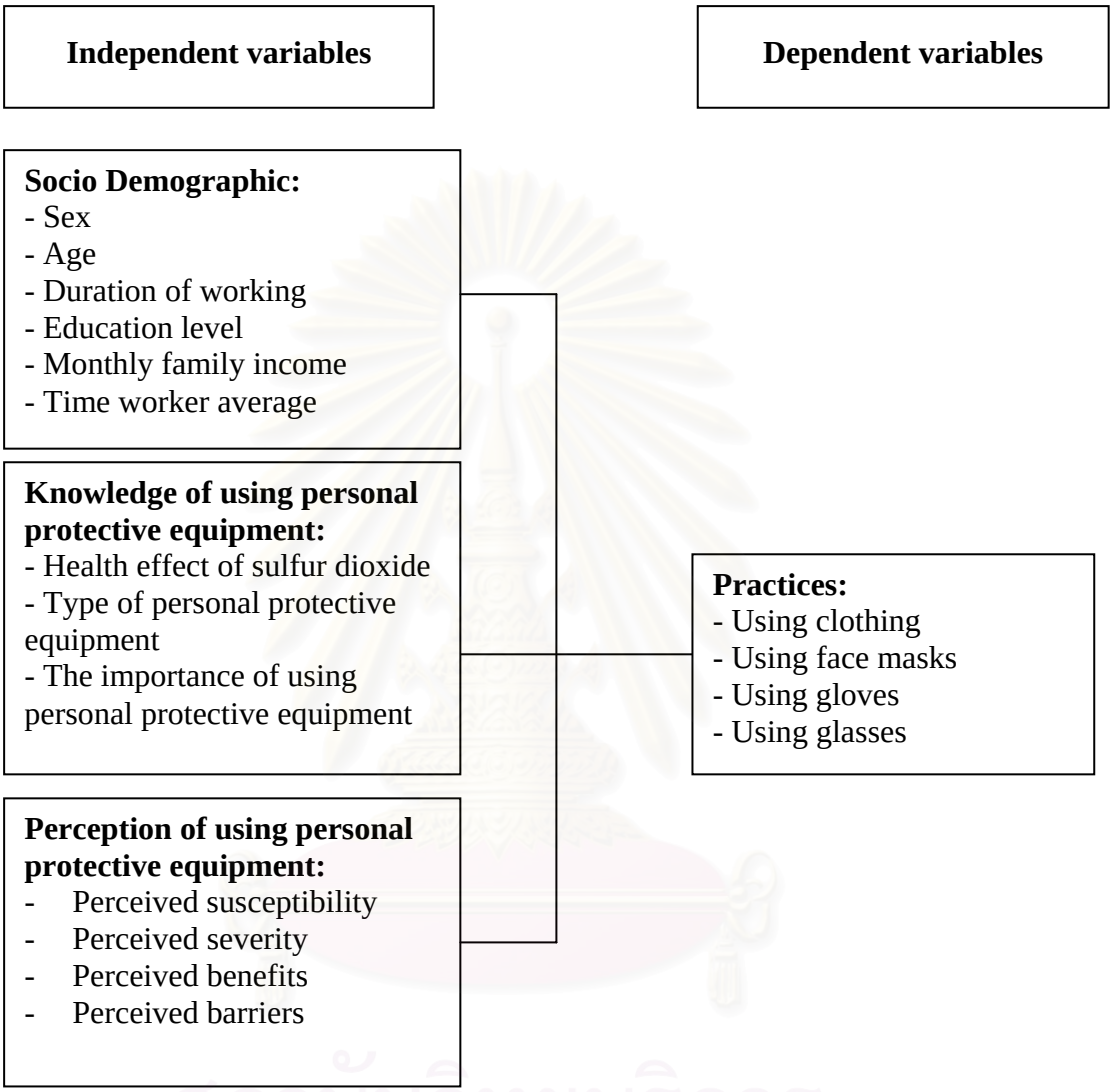

Figure 2 Conceptual framework

CHAPTER II

LITERATURE REVIEW

2.1 Knowledge Attitude Practice (KAP)

KAP survey

A KAP survey is a representative study of a specific population to collect information on what is known, believed and done in relation to a particular topic *(WHO, 2008)*. 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. It gathers information about what respondents know, what they think, and what they actually do with the particular topic. Moreover, 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. To some extent, 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.

KAP survey even can be used to orient resource allocation and project design, and to establish a baseline for comparison with subsequent, post-intervention KAP surveys.

A KAP survey will probably require internal human resources as well as external experts with specialized skills. It may be necessary to hire individuals or agencies to lead tasks such as determining the number of people to be surveyed (sample size),

designing the survey questionnaires, conducting the survey interviews in the local languages, entering data from the survey into a computer, or analyzing data. If a consultant's scope of work is expected to be most beneficial at a later phase, such as data analysis, it is important to involve the consultant from the initial design phase. This ensures that consultants are aware of the survey's purpose, design and implementation plan, and can contribute in valuable ways when their skills are needed.

KAP steps:

There are 6 steps to have a KAP survey (WHO, 2008). They are as followings:

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 Rattan handicraft occupation

Definition of rattan

Rattan is a climbing vine, which commonly grows to lengths of 600 feet and diameters from 1.8 inch to more than 2 inches. The harvesting of rattan occurs between 7 to 15 years from the start of the new growth. Rattan unlike bamboo has a solid core; this makes it ideal for use in the making of furniture.

Rattan manufacturing process

Rattan goes through a number of different processes after being harvested prior to being made into furniture. The steps in processing fresh rattan are different and each area follows a set of rules in sorting freshly cut rattan that is applicable only to their respective use. In general, there are two big processes namely primary and secondary process.

Primary process usually includes small steps such as pretreatment, grading, washing, drying, whitening, fumigation, scraping, sorting into large- or small-diameter canes and packing in Indonesia rattan villages whereas in the Philippines primary processing may take the form of trimming, scraping, treating, drying, straightening, grading/sorting and bundling and at the village level, this may include splitting. Besides, treatment, grading, drilling, grooving, and binding are included in secondary processing.

In Thuong Hien village, Kien Xuong district, Thaibinh province, in Vietnam, craftsmen often buy fresh rattan from other provinces and then do only two parts of these primary processes includes bleaching or whitening, sorting into large- or small-diameter canes. After being bleached and sorted, the rattans will be sold to people who make handicraft furniture from rattans. The two steps of primary process in Thuong Hien village are as follows:

Bleaching

In Thuong Hien trade village, fresh rattans are purchased from mountainous areas. Then, they are cleaned in rivers or ponds and the bleaching process begins when many “bushels” of raw rattan are piled on top of one another until the wooden frame is full. The frame is then covered with tarpaulin, which is secured to the ground using stone weights. The sulfur is ignited and placed under the tent, and the smoking process starts. It usually takes about 12 hours to 24 hours to complete bleaching process. The smoke from sulfur burning will gradually bleach rattan and make it whiter. After that, when the rattan is white as requirements after 12 to 24 hours, these bleached rattans will be taken out of the room by the craftsmen. In the village, each household which does primary process usually bleaches 3 to 4 times a month with the amount of about 1 ton of rattan or more each time. The data from one study reported that this bleaching process takes about 3.5 tons of powered sulfur each year in Thuong Hien village. In this stage, unless craftsmen wear personal protective equipments, the sulfur smoke will easily harm them. Moreover, the sulfur fumes may also affect other people and the environment around. When the work is done, it is also the time for serious environment pollution.

Environment pollution affect directly to people’s health so in rattan villages the rate of people with lung diseases, eye diseases and skin diseases is very high. The data from a health survey (2005) in Thuong Hien village showed that in 450 people in the village, there were 76 people (16.9%) with respiratory disease, 23 people (5.1%) with tuberculosis. The data of the year 2005 also showed that 7 people in the village died of cancer.

Sorting into large- or small-diameter canes and packing

Bleached rattans are taken out and dried again together with being sorted into large- or small-diameters canes and then being packed into bundles to wait for purchasing or for delivering to places for the secondary process.

In short, for craftsmen in Thuong Hien village who do Sorting into large- or small-diameter canes and packing, it is very easy to be injured or wounded if they do not wear any protective equipment to protect themselves. The workers usually touch 2 main occupational hazards which are: sulfur fumes and physical injuries - main factors causing diseases of people as above-mentioned. In this study, hence, the author wants to access the knowledge, attitude and practice (KAP) of rattan craftsmen in bleaching process in this village on using personal protective equipment (PPE) to prevent health effect of sulfur dioxide from their work.

Figure 3 Rattan Bleaching smoked in sulfur dioxide room

2.3 Sulfur Dioxide (SO_2)

Description and Uses:

Sulfur Dioxide is a colorless gas or liquid with a strong suffocating and pungent odor. It is used in preserving foods, for bleaching materials, and as a fumigant. It is generated in metal smelting, burning of fuels, and during the manufacture of paper pulp.

In human odor, the level of SO_2 is detected about 0.5 parts per million of air (ppm). Absorption of sulfur dioxide in the mucous membranes of the nose and upper respiratory tract occurs as a result of its solubility in aqueous media: 1 volume of water dissolves 45 volumes of sulfur dioxide at 15 ^{o}C. Absorption is concentration-dependent, with 85% absorption in the nose at 4-6 µg/m and about 99% at 46 µg/m. (Amdur, Klaassen, Amdur, and Doull, 1986) pointed out that at common ambient concentrations of sulfur dioxide, absorption in the upper airways may be inefficient.

Increased flow rates reduce the percentage of inspired sulfur dioxide absorbed in the nose and upper airways, and thus exercise promotes delivery to the smaller airways. Ammonia is found in the mouth (a product of bacterial metabolism) and may play a role in neutralizing acid aerosols. Sulfite and bisulfite are thought to be the major ions formed on absorption of sulfur dioxide. The key reactions are:

$$SO_2 + H_2O \leftrightarrow H_2SO_3$$

Occupational Exposures:

The Occupational Safety and Health Administration (OSHA) has set a workplace Permissible Exposure Limit (PEL) of 5 ppm measured as an 8-hour Time Weighted Average (TWA). The American Conference of Governmental Industrial Hygienists (ACGIH) has set a Threshold Limit Value (TLV) of 2 ppm as an 8-hour Time Weighted Average (TWA) (OSHA, 1978).

Table 1 Expose limitation of sulfur dioxide in the workplace

Some of limitation	Workplace exposure limits of Sulfur Dioxide *
OSHA	The legal airborne permissible exposure limit (PEL) is **5 ppm** averaged over an 8-hour work shift.
NIOSH	The recommended airborne exposure limit is **2 ppm** averaged over a 10-hour work shift and **5 ppm**, not to be exceeded during any 15 minute work period.
ACGIH	The recommended airborne exposure limit is **2 ppm** averaged over an 8-hour work shift and **5 ppm** as a STEL (short term exposure limit).

Source: (NIOSH, 2007; OSHA, 1978)

* The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

Human Health Effects of Sulfur Dioxide:

Level of SO_2 as mentioned above, it causes a number of adverse effects to people's health. The primary health effect of SO_2 is irritation to the eyes and upper respiratory tract. The irritation occurs when SO_2 contacts the moist mucous membranes and forms sulfurous acid (Hathaway , Proctor , and Hughes, 1996; Lipsett, 2001). This irritation also serves as a warning to the individual to leave the area of exposure. Approximately 90% of all the SO_2 inhaled is absorbed in the upper respiratory tract. The SO_2 is metabolized in the body to sulfates which are eliminated in the urine (ATSDR, 1998). Besides, the symptoms of higher concentrations of SO_2 exposure may include a runny nose, chest tightness, and a choking sensation. Lower respiratory symptoms, such as cough, may occur due to SO_2-induced bronchoconstriction (decreased diameter of the breathing tubes in the lung) (Lipsett, 2001).

The symptoms caused by SO_2 exposure will vary somewhat among individuals, but at levels of about 1-8 ppm, some changes may be noted. How long the exposure lasts is also very important to the onset of symptoms. For example, in one study, no changes in pulmonary function were noted in a group of people who breathed 1 ppm SO_2 for one hour. However, when 12 subjects inhaled 25 deep breaths of SO_2 at 1 ppm, significant increases in specific airway resistance were seen (ATSDR, 1998). Most authors, however, report that levels of 10-50 ppm for 5-15 minutes will produce symptoms in non-asthmatic individuals (Hathaway, et al., 1996).

In persons having pre-existing pulmonary problems such as asthma, the effects of SO_2 can be exaggerated, longer-lasting, and occur at a lesser level of exposure. For example, in one study, exposure of asthmatics to concentrations of 0.1-0.5 ppm SO_2 during mild exercise caused significant increases in pulmonary flow resistance (Lipsett, 2001).

Lasting effects would not be expected to occur from a single low-level exposure to SO_2. Although some studies in the literature have shown continuous, low-level exposures to be associated with increased upper and lower respiratory symptoms, many others have not. The mixed results are probably due to individual variability and the difficulty of determining early, non-specific symptoms (Lipsett, 2001).

There is no evidence of carcinogenic or reproductive effects from SO_2 (ATSDR, 1998; Lipsett, 2001);

One research of Canada’s national occupational health and safety resource (CCOHS) has shown that people’s sensitivity is different from each other, however, short exposure (1-6 hours) to concentrations as low as 1 ppm has produced a reversible decrease in lung function. From 10 to 30 minute exposure to concentrations

as low as 5 ppm can produce constriction of the bronchiole tubes. A 20-minute exposure to 8 ppm has produced reddening of the throat and mild nose and throat irritation. About 20 ppm is objectionably irritating, although people have been reported to work in concentrations exceeding 20 ppm. 500 ppm is so objectionable that a person cannot inhale a single deep breath (CCOHS, 2008a).

Volunteers in the research of CCOHS exposed to 5.4 ppm SO_2 experienced mild irritation, while 9.1 ppm cause moderate to severe irritation. At 8-12 ppm, smarting of the eyes and lachrymation (tears) began (CCOHS, 2008a). There is strong irritation at 50 ppm. In severe cases of very high concentrations in confined spaces, SO_2 has caused temporary corneal burns. Liquid SO_2 can burn the eye and permanently affect vision. Injury from contact with liquid SO_2 may not be immediately noticed by the victim because SO_2 damages the nerves of the eye. So, in case of contacting with SO_2, it is necessary to treat eyes seriously.

2.4 Personal protective equipment (PPE)

PPE Definition

Personal Protective Equipment (PPE) is safety clothing and equipment for specified circumstances or areas, where the nature of the work involved or the conditions under which people are working, requires its wearing or use for their personal protection to minimize risk (UniSA, 2008).

Another definition of PPE is defined in the Regulations as ‘all equipment (including clothing affording protection against the weather) which is intended to be worn or held by a person at work and which protects him against one or more risks to his health or safety, e.g. safety helmets, gloves, eye protectors, high-visibility clothing, safety footwear and safety harnesses (HSE, 2005).

Types of PPE for controlling health effects of sulfur dioxide

It is said that workplace controls are better than personal protective equipment. However, in the bleaching process in the study area it is necessary to use personal protective equipment (CCOHS, 2008b).

OSHA 1910.132 requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment. Besides, there are a lot of different situations in which workers work with sulfur dioxide or gas from burning sulfur and in each situation, workers need different kinds of personal protective equipment. Hence, the following recommendations are only guidelines and may not apply to every situation.

Clothing

* In order to avoid skin contact with Sulfur Dioxide, workers need to wear protective gloves and clothing. Safety equipment suppliers/ manufacturers can provide recommendations on the most protective glove/clothing material.

* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

* Where exposure to cold equipment, vapors, or liquid may occur, employees should be provided with special clothing designed to prevent the freezing of body tissues.

Eye protectors

* Wearing non-vented, impact resistant goggles when working with fumes, gases, or vapors will help prevent eyes from those gas, fumes or vapors.

* Wearing indirect-vent, impact and splash resistant goggles when working with liquids.

* And wearing a face shield along with goggles when working with corrosive, highly irritating or toxic substances to protect eyes.

Respiratory Protection

Improper use of respirators is harmful. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training; respirator fit testing and medical exams, as described in OSHA 1910.134.

* For field applications, it is necessary to check safety equipment supplier regarding the appropriate respiratory equipment.

* Where the potential exists for exposure over 2 ppm, use a MSHA/NIOSH approved full facepiece respirator with a chemical cartridge which is specifically approved for Sulfur Dioxide. Increased protection is obtained from full facepiece powered-air purifying respirators.

* If while wearing a filter or cartridge respirator worker can smell, taste, or otherwise detect Sulfur Dioxide, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, employees should leave the area immediately and it is essential to check to make sure the respirator-to-face seal is still good. If it is not, replace the filter or cartridge. If the seal is no longer good, workers may need new respirators.

* Be sure to consider all potential exposures in workplace, employees may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals. Where the potential for high exposure exists, use a MSHA/NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive

pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive pressure mode.

In addition, exposure to 100 ppm is immediately dangerous to life and health. If the possibility of exposure above 100 ppm exists, use a MSHA/NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure demand or other positive-pressure mode.

2.5 Previous study

There have been numerous studies on KAP as well as on PPE. In 2005, a study on Knowledge, Attitude and Practice Regarding Organic Solvents among Printing Workers was carried out by Ignatius, Nga, and Wong (2005). The study aimed at finding out the prevalence of good knowledge, appropriate attitude and safe practice among printing workers exposed to organic solvents, and to see if safe practice was influenced by the knowledge of and the attitude towards the harmful effects of organic solvents or not. The survey was conducted in a sample of 501 male printing workers from 28 factories in Hong Kong. In order to find out the knowledge of and attitude towards the harmful effects of organic solvents, as well as the good practices adopted by the workers when handling solvents were explored using a questionnaire. Besides, multiple logistic regression analysis was conducted to identify the major factors that influenced the knowledge, attitude and practice of workers. The author found out that good knowledge of printing workers was positively associated with awareness of the relevant legislation and past drinking behavior and negatively associated with current smoking. Moreover, appropriate attitude depended on having good knowledge and younger age. However, safe practice did not depend on

knowledge and attitude, but was positively associated with being informed of safety precautions and being supplied with chemical information by supervisors. The majority of workers believed that their employers, the Government and other statutory bodies should be responsible for providing information on chemicals, but very few of them actually obtained information from these sources. More workers preferred publications and talks rather than television as the means of obtaining further knowledge on chemicals. Especially, this study confirmed the important role of front line supervisors in improving safe practices of workers by informing them of the necessary precautions and supplying the relevant chemical information.

Paramasivam, Narayani, and Anind (2007) conducted a study on Knowledge, Attitude and Practices Related to Occupational Health Problems among Garment Workers in Tamil Nadu, India. This study aimed at assessing the level of awareness of health problems among garment workers and their attitudes and practices to prevent the same. The workers are employed in three different sections i.e. cutting, stitching and finishing. As these workers perform repetitive tasks throughout the workday, they face several work related problems. A cross-sectional study (n=216) was used in which the workers employed in the three sections had high levels of knowledge of the health problems, but the knowledge of personal protective equipment differed by section. More than one half of the workers in all the sections were aware of the benefits of PPE, but only a few workers in the cutting section were using PPE. There was a wide gap between their knowledge level and practice with protective devices.

A KAP survey was conducted in South India by Kishore et al (2008) on effectiveness of an educational program to promote pesticide safety among pesticide handlers of South India. It aimed to assess occurrence of poisoning and effectiveness

of educational interventions among pesticide handlers in areas having high occurrence of occupational poisoning. In the study, two villages of Udupi district of South India were identified by spot mapping and targeted for a public education program on safe handling of pesticides, the impact of which was assessed using a knowledge attitude and practice (KAP) questionnaire. The education was provided using a structured individualized training program to 74 pesticide handlers. Three point KAP assessments were carried out at baseline, immediately after training and after 1 month of training. Nonparametric Kruskal–Wallis tests and Friedmann tests was used to compare scores at different time points and between groups. It was found that educational intervention among pesticide handlers improved the KAP score for safe pesticide handling. Besides, it was recommended that continuous education and training programs for agricultural workers would promote awareness and minimize the hazards of occupational pesticide exposure.

The studies mentioned above were all on KAP and PPE in which different ways of carrying out research were employed. It can be seen that KAP researches have found the current situation of using PPE in trade villagers or towards the safety of workers from occupational hazards by using PPE.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research design

The thesis design was a cross sectional study concerning Knowledge, Attitude, and Practice on Using Personal Protective Equipment of Rattan Craftsmen in Trade Village, Kienxuong District, Thaibinh Province, Vietnam.

3.2 Study population

The study population of this study was main workers in the family who are working with rattan bleaching process in Thuong Hien trade village, Kienxuong District, Thaibinh Province, Vietnam.

3.3 Sample size calculation

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

Where:

n: Sample size

α: level of significant

$Z_{1-\alpha/2}$: reliability of coefficient based on level of significance

(With $\alpha = 0.05$, $Z_{1-\alpha/2} = 1.96$)

p: proportion of workers have knowledge about using PPE (p=0.5)

d: absolute precision required (d=0.05)

Therefore:

$$n = \frac{(1.96)^2(0.5)(1-0.5)}{(0.05)^2} = 384$$

With estimate 10% will not participate.

The sample size is 420 workers.

3.4 Sampling method

Thuong Hien trade village in Kienxuong District was selected based on the purpose of using systematic random sampling method. Sampling technique process for screening was conducted by the steps below (Figure 4):

1. Created a list of all household in the community which are doing bleaching in the house (938 households).

2. Selected a systematic sample from a random start using the sampling interval.

- Divided the total households' size (938) by the number of sample size (n=420) to obtain the sampling interval (k=2.23).

- Chose a random number between one and the sampling interval (1 to 2).

- Selected the first household by choosing randomly one number (i=1) in the selected number line.

- Chose subsequent workers by adding the sampling interval to the random number, then to the result of this number and so on. (1, 3, 5…835, 837, 839)

- Each household chose one main worker working with bleaching process to interview.

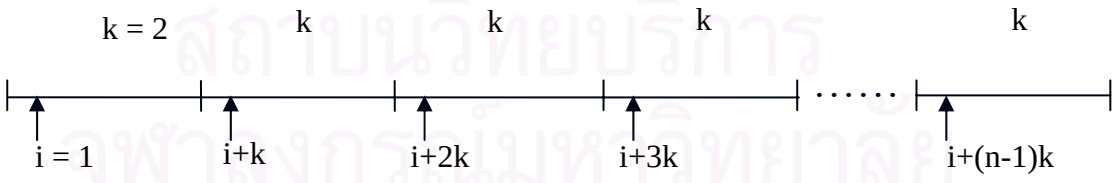

Figure 4: Sampling technique process for screening

3.5 Research instruments and measurements

This thesis used one data collection instrument i.e. questionnaire to interview workers by face to face. The Questionnaire was conducted based on Health Believe Model theory (Stretcher and Rosenstock, 1997) and How to conduct KAP survey (WHO, 2008).

The questionnaire was employed in this study to access the knowledge, attitude and practice on using personal protective equipment of rattan craftsmen. The questionnaire consists of four parts.

Part A (Socio-demographic):

There were 13 questions in this part. The questions include gender, age, education levels, and monthly family income of rattan craftsmen, duration of working, frequency working per year, month, and each time.

Part B (Knowledge regarding using personal protective equipment)

There were 16 questions in this part and we asked to know about the knowledge of using personal protective equipment which included health effect of sulfur dioxide, type of personal protective equipment should be used. A correct answer was given 1 score and 0 score for wrong answer. The score varied from 0-16 points and was classified into 3 levels as follows: Bloom's cut off point, 60%-80%

High level (80-100%)	13-16 scores
Moderate level (60-80%)	10-12 scores
Low levels (Less than 59%)	00-09 scores

Part C (Attitude regarding using personal protective equipment)

This part included the attitude of the people towards using personal protective equipment and it was assessed by using Likert's scale. There were 10 statements which included both positive and negative. The rating scale was measured as follows:

Positive Statement		Negative Statement	
Choice	Scores	Choice	Scores
Strongly agree	4	Strongly agree	0
Agree	3	Agree	1
Neural	2	Neural	2
Disagree	1	Disagree	3
Strongly disagree	0	Strongly disagree	4

The scores varied from 0 to 40 and all individual answers were summed up for total scores and calculated for means. The scores were classified into 3 levels (Positive Attitude, Neutral Attitude, and Negative Attitude).

Positive Attitude	32-40 scores
Neutral Attitude	24-31 scores
Negative Attitude	00-23 score

Part D (practice of workers about using personal protective equipment to protect themselves from their work)

There were 11 questions in general practice of the rattan craftsmen work on using PPE in the bleaching process. The rattan craftsmen was asked about how often they used each PPE, if they answered usually use they will be given with good practice, if they answered sometime use they will be given with fair practice, and if they answered never use they will be given with poor practice.

3.6 Data collection

Prior to data collection, permission to carry out the study was taken from the Ethics committee of Thaibinh Medical University and local authorities. The Ethics committee of Thaibinh Medical University and local authorities were described about the details and objectives of the study, questionnaire and data collection procedure. Then the aims and objectives regarding the research were explained to the study subjects. Subjects were interviewed by the trained assistants to fill the questionnaire. The study was done everyday from 7.00 a.m. to 17 p.m. from January 06 – 20, 2009.

3.7 Data analysis

3.7.1. Data entry and editing

Data was coded and entered twice by using Epi Data software.

3.7.2. Statistical technique

SPSS software was used for data analysis.

Descriptive statistics such as frequency, percentage, mean and standard deviation were used primarily to summarize and describe the data to make it more graspable. For analytical statistic Chi-square was used where appropriate and correlation coefficient was used to describe the strength and direction of the relationship between two variables.

3.8 Ethical Considerations

- The thesis proposal was presented to the members of Thaibinh Medical University, Vietnam.

- The questionnaire was explained to rattan craftsmen before interview.

- Rattan craftsmen may chose to stop the interview at any time.

- The data was used for research's purpose only.

CHAPTER IV

RESEARCH RESULTS

This chapter provides a detailed description of the results obtained from the analysis of the survey. The variables are described as simple percentages, means, and standard deviations as appropriateness depends on the nature of the variables. It starts with the demographic data followed by the responses for each section of the questionnaire. The level of knowledge, attitude, and practice score were then presented followed by the results of Chi-square test used as appropriate whether there is any association between socio demographic characteristics and practice scores. Lastly, correlation was used to show the relationship between Knowledge and Attitude and Practice scores among the respondents.

4.1. Socio - Demographic Information

This study was conducted in Thuong Hien trade village, Kienxuong district, Thaibinh province, Vietnam. Four hundred and three participants (n=403, 95.95%) were consented to complete the face to face questionnaires. The majority of the participants were male (59.80%). The age ranged from 20 to 70 years. The average age of the participants was 43 years with a standard deviation of 10.66. Table 1 show that the majority of the respondents were in the range of 41 – 50 (30.8%) and 31 – 40 years (30%), while 18.1% were in the range of 51-60 years, and 7.0% were older than 60 years. Most of them were educated in secondary school (66.8%), in contrast, only 1.2% of respondents had no school or literacy classes only. Most of them have annual family income (80.89%) of less than 1,000,000 VND (57 USD) per month as shown in table 2.

Table 2 Distribution of the respondents by socio-demographic characteristics

Characteristics	Number (n=403)	Percentage (%)
Gender		
Male	241	59.8
Female	162	40.2
Age (years)		
≤ 30	57	14.1
31 – 40	121	30.0
41 – 50	124	30.8
51 – 60	73	18.1
> 60	28	7.0
Mean ± SD = 43 ± 11	**Range = 20 to 70**	
Education level		
No school, Literacy classes only	5	1.2
Primary school	89	22.1
Secondary school	269	66.8
High school	40	9.9
Income (VND per month) *		
< 1,000,000	326	80.89
1,000,000 – 2,000,000	64	15.88
≥ 2,000,000	13	3.23

* 1 USD = 17.500 VND

4.2. Factors related to rattan bleaching process

According to table 3, Average working year with rattan bleaching process of the respondents was 19 years with standard deviation of 10.6 varied from 1 to 50 years. Average working duration was 11 months per year with standard deviation of 1.7. Average working frequency was 8 times per month and the average time of each bleaching process was 18 hours.

Table 3 Rattan bleaching process and exposure time of the respondents in rattan bleaching process.

Variables	**Mean (SD)**	**Range**
Working year with rattan bleaching process	19 (10.6)	**1-50**
Working duration per year (months/year))	11 (1.7)	5-12
Working frequency (times/month)	8 (3.6)	1-16
Time of each bleaching process	18 (4.8)	6-24

4.3. Source of information regarding harmful effects of rattan bleaching process

Among the respondents, 91.6% has known that rattan bleaching process can cause harmful effect to their health while 8.4% has not known about this as shown in figure 5.

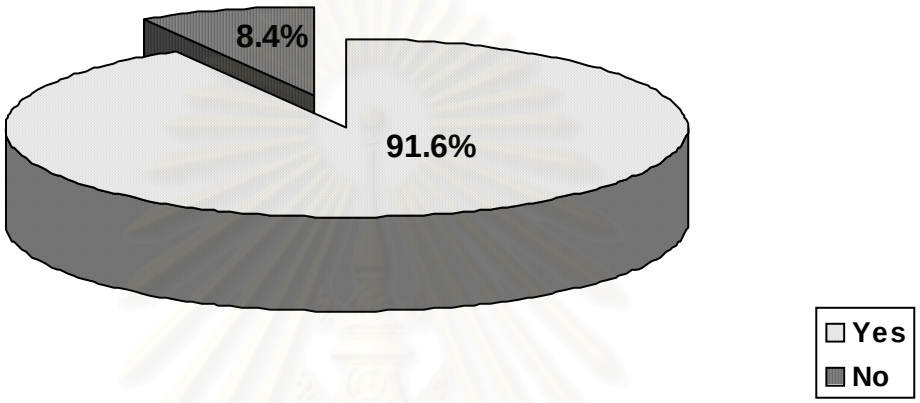

Figure 5: Respondents knowledge on rattan bleaching process causing adverse health effect

In the questionnaire, respondents were allowed to select more than one source for received information about rattan bleaching process causing harmful effect to their health. Overall 91.6% of the participants have known that rattan bleaching process causes harmful effect to their health. Most of them (79.95%) received the knowledge from family, friends, neighbors, and colleagues; while 28.73% of which received from radio. The other small percentages received from newspapers and magazines, billboards, health workers, brochures, poster and other printed materials as shown in Table 4.

Table 4 Number and percentages of the respondents receiving information about rattan bleaching process was harmful effects to their health

Information Source	Respondents receiving the information	
	number (n=369)	percentage (%)
Newspapers and magazines	30	8.13
Radio	106	28.73
TV	52	14.09
Billboards	1	0.27
Brochures, posters and other printed materials	3	0.81
Health workers	38	10.30
Family, friends, neighbors, and colleagues	295	79.95
Others	45	12.20

4.4. Knowledge on using personal protective equipment

Participants answered a total of 16 questions. Each correct answer was given one point with a total of 16 points. The average knowledge score from the respondents was 7.22 (SD=3.24) out of possible 16 points. The knowledge score was in the range of 0 – 16. While, only 5 respondents were able to answer all the questions correctly.

The distribution of the knowledge on using PPE of the respondents showed that 78.16% of subjects had “Low knowledge”, 18.11% of them had “Moderate knowledge” while only 3.72% of the respondents had “High knowledge” as shown in table 5.

Table 5 Distribution of knowledge level on using personal protective equipment

Knowledge level	Number (n=403)	Percentage (%)
High (13-16 score)	15	3.72
Moderate (10-12 score)	73	18.11
Low (0-9 score)	315	78.16

According to the question number 16 in the questionnaire summarized in table 6, many respondents (86.35%) knew that burning sulfur can cause some poisonous gas, but only few of them knew the exact name of the poisonous gas, such as Hydrogen sulfite (H_2S) and sulfur dioxide (SO_2). It was only 34.24% of the respondents knew Hydrogen sulfite (H_2S) gas and 37.97% knew sulfur dioxide (SO_2).

About the health effect, only a small number of the respondents (26.80%) knew that the gas from burning Sulfur is not only poisonous to respiratory organs but also other parts of the body. Nearly half of them (41.44%) knew that the gas from burning Sulfur is poisonous to skin.

Table 6 Number and percentages of appropriate knowledge for using PPE by the respondents

Items	**Number (n=403)**	**Percentage (%)**
1. Burning Sulfur (S) causes some poisonous gas *	384	86.35
2. The current process of burning sulfur is safe for workers	214	53.10
3. It is necessary to build oven to bleaching rattan *	240	59.55
4. The poisonous element of bleaching process is fungi	142	35.24
5. The poisonous element during the bleaching process is causing the gas of H_2S *	138	34.24
6. The poisonous element during the burning process is causing the gas of SO_2 *	153	37.97
7. The gas from burning Sulfur is only poisonous to respiratory organs	108	26.80
8. The gas from burning Sulfur is not poisonous to skin	167	41.44
9. Wearing gloves does not play the role of poisonous preventive for my skin	134	33.25
10. Wearing face masks or clothing is enough at work	140	34.74
11. I need to wear glasses to avoid effect of sulfur dioxide on eye *	206	51.12
12. I need to wear face masks to avoid effect of sulfur dioxide on respiratory *	209	51.86
13. Wearing face masks, gloves, glasses, clothing only in picking rattan out is enough	153	37.97
14. Wearing face mask, glove, clothing, glasses can prevent the gas from burning Sulfur *	227	56.33
15. Wearing short hand clothing can prevent skin effect of sulfur dioxide	165	40.94
16. Wearing only clothing can prevent effect of sulfur dioxide on skin	167	41.44

* Positives statements

4.5. Attitude on using personal protective equipment

Participants answered a total of 10 questions with the total score of 40. The distribution of attitudes on using PPE of respondents were shown in table 7, there were 4.22% of respondents who had “positive attitude”, 68.98% of them had “neutral attitude”, while 26.8% had “negative attitude”. The average attitude score for all respondents were 25.8 (SD=3.42) out of a possible 40 points.

Table 7 Distribution of attitude levels towards using PPE of the respondents

Level of attitude	Number (n=403)	Percentage (%)
Positive (32-40 scores)	17	4.22
Neutral (24-31 scores)	278	68.98
Negative (00-23 scores)	108	26.80

According to table 8, approximately half of the respondents’ attitudes agreed with the idea that bleaching rattan indoors is very dangerous (56.33%), 50.12% of respondents agreed that having respiratory organs checked by medical workers annually is necessary. 54.09% agreed that workers need to be trained of using PPE, while that face mask is not enough to protect themselves from sulfur fumes was agree by 51.12% of respondents.

Table 8 Percentages of attitudes towards using PPE of each individual item by respondents

Attitude	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	(%)	(%)	(%)	(%)	(%)
1. I think it is dangerous when bleaching rattan indoors	34.99	56.33	7.44	1.24	-
2. In my opinion, it is necessary to change burning area for the whole village	18.61	42.93	22.08	16.38	-
3. I think it is necessary to have respiratory organs checked by medical workers annually	22.58	50.12	20.84	6.45	-
4. I think it is necessary to change the current bleaching chemical to less poisonous bleaching chemicals	14.39	50.62	30.02	4.71	0.25
5. Workers are needed to be trained of using clothing, gloves, face mask, glasses	8.68	54.09	29.53	7.69	-
6. In my opinion, health workers should monitor the use of using clothing, gloves, face mask, glasses	4.96	47.15	37.97	9.93	-
7. In my opinion, face mask is not enough to protect myself from sulfur fumes	2.48	51.12	37.47	8.93	-
8. I think I can not get skin disease from sulfur fumes *	1.49	41.94	33.75	22.83	-
9. I think I should not continue working if I lack of personal protective equipments	1.74	40.45	43.92	13.90	-
10. In my opinion, if I wear enough personal protective equipment, I can be protected from sulfur burning.	8.68	49.88	36.97	4.22	0.25

* Negative statement

4.6. Practice about using personal protective equipment

Among the respondents, 29% had ever been using at least one kind of personal protective equipment, while 71% had never used any PPE (Figure 6).

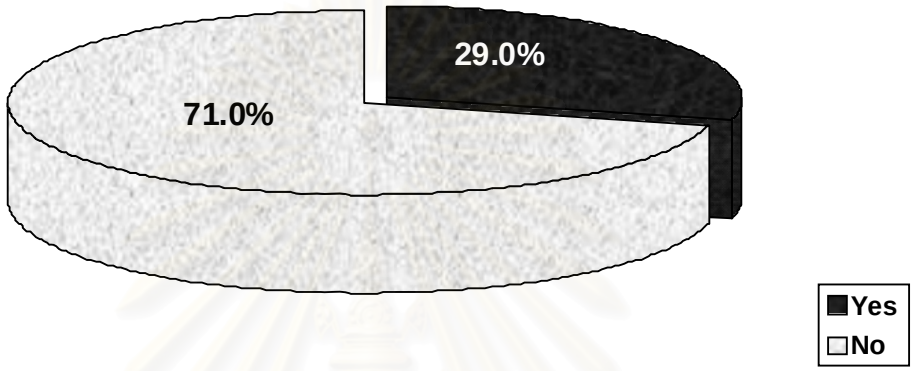

Figure 6 Respondents using at least one kind of PPE

Respondents were allowed to select more than one type of PPE that they had used to protect themselves in rattan bleaching process. Among 29% of respondents using at least one kind of PPE, 100% of them had absolutely used respirator, while 27.35% used hand and arm protection, 11.11% used Eye protector, only 2.56% of them used foot protection and 1.71% of them used clothing, respectively as shown in table 9.

Table 9: Percentages of respondents using PPE of each individual type

Type of PPE	**number (n=117)**	**percentage (%)**
Respirator	117	100.00
Hand and arm protection	32	27.35
Eye protectors	13	11.11
Foot protection	3	2.56
Clothing	2	1.71

Table 10 showed that respondents had fair level of practice more than good level of practice (53% compare to 47% with respirator; 56.2% compare to 43.8% with hand and arm protection). None of the respondents had poor practice.

Table 10 Distribution of practice on using PPE of the respondents

Type of PPE		**Practice**		
		Poor No. (%)	**Fair No. (%)**	**Good No. (%)**
1. Respirator (face masks)	n=117	-	62 (53.0)	55 (47.0)
2. Hand and arm protection (gloves)	n=32	-	18 (56.2)	14 (43.8)
3. Eye protectors (glasses)	n=13	-	10 (76.9)	3 (23.1)

According to table 11, most of the reason for "why the respondents do not use PPE" were uncomfortable, for respirator was 76.6%; for hand and arm protection was 77.6%, and for eyes protectors was 79.5%, some reasons came from unnecessary, unavailable and nobody uses.

Table 11 Distribution of reason why the respondents not use PPE

Type of PPE	**1 No. (%)**	**2 No. (%)**	**3 No. (%)**	**4 No. (%)**
1. Respirator (N = 286)	32 (11.2)	75 (26.2)	219 (76.6)	38 (13.3)
2. Hand and arm protection (N = 371)	37 (10.0)	96 (25.9)	288 (77.6)	38 (10.2)
3. Eye protectors (N = 390)	36 (9.2)	98 (25.1)	310 (79.5)	38 (9.7)

1. Unavailable; 2.Unnecessary; 3.Uncomfortable; 4. Nobody uses

Table 12 showed that 71.2% of respondents had at least one kind of symptom while 28.8% did not have any kind of symptom during the year 2008. Among 71.2% participants had at least one symptom during last year, almost all workers (93.4%) had cough, 52.3% of which had sore throat, 27.2% had eyes red and a few of them had other symptoms such as running or stuffy nose, shortness breath, wheezing.

Table 12 Distribution of respondents' health conflictions during year 2008

Variables	Number of respondent	Percentage (%)
Have any kind of symptom during year 2008	**n (403)**	
Yes	287	71.2
No	116	28.8
Kind of symptom	**n (287)**	
Cough	268	93.4
Wheezing	28	9.8
Shortness breath	51	17.8
Sore throat	150	52.3
Running or stuffy nose	66	23.0
Skin red	7	2.4
Skin itching	13	4.5
Eyes red	78	27.2
Eyes itching	18	6.3
Physical injury	20	7.0

4.7. Association among socio-demographic characteristics and the level of KAP

To compare the knowledge level on using PPE between the different groups (age group, gender, education, annual family income group), Chi-square was used. Statistically significant difference was found between all of the groups. Knowledge was highly statistically significant association with age group *(p<0.01)*, mean while knowledge was statistically significant association with gender, lever of education, annual family income (Chi-square test, *p< 0.05*) (see table 13).

Table 13 Association among knowledge levels and socio-demographic

Characteristics	**Knowledge**			χ^2	***p-value***
	Low No. (%)	**Moderate No. (%)**	**High No. (%)**		
Gender				6.7	0.035*
Male	178 (73.9)	53 (22.0)	10 (4.1)		
Female	137 (84.6)	20 (12.3)	5 (3.1)		
Age group				30.87	<0.001**
≤ 30	47 (82.5)	10 (17.5)	0		
31 – 40	96 (79.3)	15 (12.4)	10 (8.3)		
41 – 50	92 (74.2)	32 (25.8)	0		
51- 60	52 (71.3)	16 (21.9)	5 (6.8)		
> 60	28 (100)	0	0		
Level of education				16.48	0.011*
No school	5 (100)	0	0		
Primary school	58 (65.2)	23 (25.8)	8 (9.0)		
Secondary school	218 (81.0)	44 (16.4)	7 (2.6)		
High school	34 (85.0)	6 (15.0)	0		
Annual family income group				10.93	0.027*
≤ 1,000,000	263 (80.7)	52 (16.0)	11 (3.3)		
1,000,000 - 2,000,000	45 (70.3)	15 (23.5)	4 (6.2)		
> 2,000,000	7 (53.8)	6 (46.2)	0		

* Statistically significant association at 0.05 level

** Statistically significant association at 0.01 level

To compare the attitude level on using PPE between the different groups (age group, gender, education, annual family income group), Chi-square was used. Attitude was highly statistically significant association with level of education *(*Chi-square test, *p<0.01),* meanwhile attitude was statistically significant association with age group *(*Chi-square test, *p=0.02),* but was not association with gender *(*Chi-square test, *p=0.483),* annual family income group *(*Chi-square test, *p=0.258).*

Table 14 Association among attitude levels and socio-demographic

Characteristics	**Attitude**			χ^2	***p-value***
	Positive No. (%)	**Neutral No. (%)**	**Negative No. (%)**		
Gender					
Male	63 (26.1)	170 (70.5)	8 (3.4)	1.46	0.483
Female	45 (27.8)	108 (66.7)	9 (5.5)		
Age group				18.17	0.020*
≤ 30	11 (19.3)	42 (73.7)	4 (7.0)		
31 – 40	38 (31.4)	75 (62.0)	8 (6.6)		
41 – 50	24 (19.4)	95 (76.6)	5 (4.0)		
51- 60	28 (38.4)	45 (61.6)	0		
> 60	7 (25.0)	21 (75.0)	0		
Level of education				20.49	0.002**
No school	4 (80.0)	1 (20.0)	0		
Primary school	34 (38.2)	49 (55.1)	6 (6.7)		
Secondary school	62 (23.0)	196 (72.9)	11 (4.1)		
High school	8 (20.0)	32 (80.0)	0		
Annual family income group				5.30	0.258
≤ 1,000,000	88 (27.0)	221 (67.8)	17 (5.2)		
1,000,000 - 2,000,000	18 (28.1)	46 (71.9)	0		
> 2,000,000	2 (15.4)	11 (84.6)	0		

* Statistically significant association at 0.05 level

** Statistically significant association at 0.01 level

To compare the practice level on using respirator between the different groups (age group, gender, education, annual family income group), Chi-square was used. The practice of using respirator was not statistically significant association among gender, age group, and education level (Chi-square test, $p>0.05$). However, the annual family income was highly statistically significant association with practice on using respirator (Chi-square test, $p< 0.01$) (table 15).

Table 15 Association among practice levels on using respirator and the difference groups

Variable	Practice on using respirator		χ^2	*p-value*
	Fair No. (%)	**Good No. (%)**		
Gender			0.08	0.777
Male	32 (55.2)	26 (44.8)		
Female	30 (50.8)	29 (49.2)		
Age group			7.82	0.098
≤ 30	6 (75.0)	2 (25.0)		
31 – 40	14 (48.3)	15 (51.7)		
41 – 50	24 (47.1)	27 (52.9)		
51- 60	15 (75.0)	5 (25.0)		
> 60	3 (33.3)	6 (66.7)		
Level of education			3.32	0.346
No school	1 (100.0)	0		
Primary school	3 (37.5)	5 (62.5)		
Secondary school	55 (55.6)	44 (44.4)		
High school	3 (33.3)	6 (66.7)		
Annual family income group			9.69	0.008*
≤ 1,000,000	44 (46.3)	51 (53.7)		
1,000,000 – 2,000,000	14 (77.8)	4 (22.2)		
> 2,000,000	4 (100.0)	0		

* Statistically significant association at 0.01 level

Knowledge, attitude, and practice regarding to the use of personal protective equipment were also treated as continuous variable, and correlation coefficients were computed. Knowledge on PPE using was not regarded as a significant correlation with level of respirator use *(Spearman's rho, p=0.928).* In comparison, attitude was regarded as highly significant correlation with the level of respirator using *(Spearman's rho, p<0.01),* as shown in table 17 and attitude also had a statistically significant correlation with knowledge on using PPE *(Pearson correlation, p<0.05)* as shown in table 18.

Table 16 Correlation between knowledge score and respirator using

Variables	**Respirator using**	
	Spearman's rho	***p-value***
Knowledge	0.008	0.928

Table 1 Correlation between attitude score and practice on using respirator

Variables	**Respirator using**	
	Spearman's rho	***p-value***
Attitude	0.250	*0.006**

* Correlation was significant at the 0.01 level.

Table 2 Correlation between knowledge score and attitude score

Variables	**Attitude**	
	Pearson correlation	***p-value***
Knowledge	0.11	*0.029**

* Correlation was significant at the 0.05 level.

CHAPTER V

DISSCUSION

In this chapter, a brief description of the major findings and their significance to practice will be discussed with its limitations.

A survey was conducted to investigate the KAP of using PPE of rattan craftsmen in trade village in Thaibinh province, Vietnam. According to the author's knowledge, this is the first study of its kind ever conducted in the Thaibinh province in the industry of rattan producing.

5.1. Socio - demographic

As it is generally accepted that there is significantly accepted difference in the gender in occupations (Paramasivam, Narayani, and Anind, 2007). Similarly, the results showed male predominance with 59.8 % compared with 40.2% of earlier mentioned report working on textile industry. The reason for this difference is that rattan sulfur - bleaching process is a hard and poisonous work that require much of time (18 hours each time on average) so men usually account for this risk work.

Other different studies showed that the working group in cottage industries is in the range of 25 to 40 years (Attia, 2000; Yassin, Abu Mourad, and Safi, 2002; Paramasivam Narayani, and Anind, 2007). Our study also revealed an average age of 43 years of rattan craftsmen which may lead to the fact that the workers had a longer exposure directly to toxic pollutant from sulfur-burning gas.

Besides, in this study, most of the rattan craftsmen (66.8%) had secondary education. This is because of the fact that producing rattan products is the main work of people in the village. Thus, nearly all members of families take part in different

stages of producing rattan handicrafts from buying fresh rattan from other provinces of harvesting from the field, bleaching rattan, splitting rattans into small scales to weaving to make rattan handicrafts. Of which, main workers in each family are responsible for buying fresh rattan, bleaching and selling final products whereas other members are responsible for splitting rattans into small scales. These works took much time of main workers in each family so it explained why a big number of main workers in the study only had secondary education. Besides, due to the fact that producing rattan products require scrupulousness and consume much time, so members of the village did not have time for higher education.

As same as other trade villages, the family income of rattan craftsmen in the trade village in the study was very low - with less than 1,000,000 VND (57 USD) and most of the 80.89 % of the workers were earning less. In the year 2008, Vietnam's per capita income was 1,000 USD per year (83 USD/month) compared with annual income of rattan craftsmen, so the craftsmen in this village were poor people. Besides, because of low level of education, it is difficult for them to do another job to be able to improve income and life.

5.2. Factors related to sulfur - bleaching process

In this study, average working year with rattan sulfur - bleaching process of the respondents was 19 years, average working duration was 11 months per year, average working frequency was 8 times per month and the average time of each bleaching process was 18 hours. As well as the literature in Robson and Toscano (2007) defines that risk is the function of hazard and exposure. Those study numbers showed that the craftsmen spent a lot of time in their life expose with sulfur dioxide (hazardous gas). From the environmental observation around the bleaching room, many plants were

damaged and dead, this may be because high concentration of sulfur dioxide may leak from the bleaching room. According to the above evidence such as high concentration of sulfur dioxide, more frequency exposure, and longer exposure duration, therefore, the craftsmen or the household members may be getting risk to both acute health effect and chronic diseases related to their living and/or working nearby bleaching room.

5.3. Source of information regarding harmful effects of rattan bleaching process

The rattan craftsman and his family are being both the employer and the employee themselves. The majority of craftsmen in the study obtained information on chemicals via several informal sources (from co-workers and mass media) – similar to other studies in the field of cottage industries (Ignatius, Nga, and Wong, 2005). The source of the information related to the industry and occupational hazards was traditional and was usually transferred one by one as respondents in the study received the knowledge from their families, friends, neighbors, and colleagues approximately 80% rather than from radio (28.7%). In Vietnam, each village has one radio system that usually broadcasts general information of the village about rice planting or propagandizing other issues. Therefore, Local authority should use the village radio system to raise awareness and knowledge of the villagers, craftsmen in particular, of not only harmful effects of sulfur dioxide but also other health information. Besides, basic knowledge of good effects of using PPE to protect craftsmen from their work should also be given to them so that they could equip themselves with safe PPE to prevent harmful effects of rattan bleaching process.

5.4. Knowledge on using personal protective equipment

In rattan bleaching process, Sulfur is one of the main chemicals that have the most adverse harmful effects on the workers of the industry. A number of studies related to KAP of different category of workers have been reported in the literature, but this is the first systematic study to reveal KAP and the underlying factors that influence the health problems of the craftsmen in Vietnam. There are many ways for the workers to protect themselves from the harmful effects of these chemicals. One of the important ways to protect the workers from the gas of burning sulfur is the use of PPE. Another literature on KAP regarding organic solvents among printing workers in Hong Kong (Ignatius, Nga, and Wong, 2005) reported that the workers in the printing industry in which many chemicals are used had a good knowledge (62%) about the harmful effects of the chemicals in printing which was excellent and 91.6% respondents knew that chemicals used in the industry have harmful effects to their health. These may because Hong Kong is a developed country that allows all its citizens to enjoy a free and healthy life in a safe environment (the text of Secretary-General from General Kofi Annan, http://www.unescap.org/unis/press/G_05_00.htm); so the workers have higher education and they also can easier to obtain the proper information on KAP via several mass media while most Vietnamese workers were opposite.

However, Attia (2000) noted in her study that workers in this industry had small knowledge about PPE. This is similar to the number in this study reported in Chapter III that majority (78.16%) of workers also have low level of knowledge.

5.5. Attitude on using personal protective equipment

A study of Yassin, Abu Mourad, and Safi (2002) assessed the attitude regarding the use of harmful chemicals for workers in small industries. According to their study, 59.3% were against the use of chemicals which have harmful effects while the present study, this number is 26.80% and majority (68.98%) remained neutral (see chapter III).

5.6. Practice on using personal protective equipment

The use of PPEs are different depending on type of industries; a survey on usage of PPE in Hong Kong (OSHC, 2000) revealed that renovation workers interviewed, less than 50% of them were using PPE such as safety helmets (33.6%), safety goggles (37.6%), safety belts (25.6%), safety gloves (45%), safety shoes (20.1%), ear plugs (21.3%) and face mask (11.2%). Not more than 10% of the workers had used protective clothing (9.2%) or apron (2.8%). 470 kitchen workers were interviewed on their views on using PPE. 74.5% of the subjects who wore PPE during work didn't think that the PPE were necessary. In our study, 29% of respondents have ever used at least one kind of PPE (71% did not use any PPE) and among 29% who have been using least one kind of PPE have 100% of them used respirator, while 27.4% used hand and arm protection, 11.1% used Eye protector, only 2.6% and 1.7% of them used foot protection and clothing, respectively.

There were many reasons observed why not to use PPE, the majority of craftsmen in this study was not using because they believe that use of PPE are uncomfortable similar to the result of the survey conducted in Hong Kong (OSHC, 2000).

In the rattan household industry, sulfur pollutants may have diverse harmful effects which affect to craftsmen in many systems such as eyes, skin and upper

respiratory tract. In this study 71.2 % had at least one symptom during the year 2008. Cough, sore throat and redness of the eyes were common found symptoms. As well as mentioned in OSHC (2000) the symptoms of higher concentrations of SO_2 exposure may include a runny nose, chest tightness, and a choking sensation. Lower respiratory symptoms, such as cough, may occur due to SO_2 - induced bronchoconstriction (OSHC, 2000).

5.7. Association among socio-demographic characteristics and the level of KAP

In this study, knowledge level on using PPE was significant association with all of the socio-demographic characteristics i.e age ($p<0.01$), gender ($p<0.05$), level of education ($p<0.05$), annual family income ($p<0.05$). It is easy to understand that the more workers have high education, the more they have knowledge. The elder workers can learn self–protecting knowledge from experiences in their work. The result also showed that attitude was significant association with level of education and aging group ($p<0.05$). While, practice level of using respirator only depends on annual family income. It could be explained as if craftsmen can earn more money, they may consider paying for PPE and willingness to raising their awareness on work to protect them from risk.

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CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

The assessment of the level of knowledge, attitude and practice on using personal protective equipment (PPE) of rattan craftsmen in a trade village in Kienxuong district, Thaibinh province, Vietnam according to protect them from health effect of sulfur dioxide in sulfur-bleaching process could be concluded that the prevalence of good knowledge and appropriate attitude was low equal 3.72% and 4.22% respectively. The prevalence of using respirator was found 29.00 %. Furthermore, the knowledge was associated with socio demographic characteristics (Chi-square test, $p<0.05$) such as age group, gender, level of education and family income. The attitude was associated with age group (Chi-square test, $p<0.05$) and level of education (Chi-square test, $p<0.01$), meanwhile family income associated with the respirator using (Chi-square test, $p<0.01$). Additionally, most of the craftsmen knew that burning sulfur causes a poisonous gas; only few of them knew exactly the name of the poisonous sulfur dioxide gas. 91.6% of the participants have known that rattan sulfur-bleaching process can cause harmful effect to their health, 79.95% of the participants received the knowledge information by family, friends, neighbors, and colleagues; while the left participants received from radio. Among 71.2% participants had at least one symptom during last year such as cough (93.4%), sore throat (52.3%), eyes red (27.2%), and the left symptoms including running nose or stuffy, shortness breath, wheezing, etc.

6.2 Recommendations and suggestions

In general, personal protective equipment like respirator, hand and arm protection, eye protectors, foot and clothing protection were not readily accepted to the workers due to improper fitting and hindrance of their work efficiency. Thus, there is a need for improving the devices or redesigning the devices to ensure the workers to use them effectively. Using safety practices, it would be helpful to improve better occupational health and quality of life among the workers.

Therefore, there is a need to develop evidence-based methods, which can assess the occupational health risks. The intervention tools should be developed for enhancing the suitable practice of PPE using and improve the quality of protective devices. Moreover, enable health personnel as providers of quality assured information still need to give better advice to the workers. Meanwhile, all the workers need to be trained in the use of personal protective devices. Wherever there is a threat to the workers' health, the use of personal protective equipment should be made mandatory and strict vigilance is needed to enforce their usage. A holistic participation of the industry officials, management, and workers would play an important role in improving the occupational health and safety of industrial workers.

For policy on the basis of the findings in this study, the following issues should be considered for improving knowledge of craftsmen of harmful effects of SO_2 and the importance of using PPE at work following:

1. Public education is necessary to address the knowledge gap revealed in the study. Therefore educational programs should be organized for improving knowledge about harmful effects of SO_2 and it should focus mainly on increasing the awareness of the people of the importance of using PPE at work.

2. To improve and develop occupational networks, services of occupational health should be organized: for example, health officers in trade villages should concern more about diseases that craftsmen may get from their occupation. Besides, basic occupational health services should be provided for all workers.

3. Local authority should operate the village radio system to raise awareness and knowledge of the villagers and craftsmen, in particular, not only harmful effects of sulfur dioxide but also other health information. Besides, basic knowledge of good effects of using PPE to protect craftsmen from their work should also be given to them.

4. Free publishing materials concerning to education, training and specific information on occupational health should be offered.

For limitation of research, there are a number of important limitations to this study. For example, this investigation did not consider (1) potential risk of health effect to non-worker in the household and community (2) exactly number of sulfur dioxide craftsmen may be exposed (3) the study may have recall bias as some questions require them recall the things in the past such as question number 25 about symptoms of diseases they got the previous year. Therefore, research along this line should be available in the future.

6.3 Further study

Although, KAP and PPE have been reported in many studies, however, this study is the first report on KAP of using PPE focusing on rattan craftsmen in trade village in Thaibinh province. In fact, there are many household industries in Vietnam that could be studied by applying the advantage of this study as a general guideline for other industrial activities and different groups of the workers. Furthermore, future

researches should be concerned about disease, factors hindering practices and behavioral changes in order to develop the effective and reliable implementation program to avoid the harmful effects and prevent risks caused by several occupational diseases. Therefore, a study to exploit current diseases of handicraft villagers would be an attractive suggestion.

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APPENDICES

APPENDIX A: MAP OF VIETNAM

APPENDIX B:
QUESTIONNAIRE (English version)

Survey objective: To investigate the knowledge, attitude, and practice on using personal protective equipment of rattan craftsmen related to bleaching process.

Code: . . . . . Date: . . . . / 1 / 2009

Information to read to respondent:

We wish to learn about your knowledge, attitudes and practices regarding to using personal protective equipment to reduce health effect of sulfur dioxide from bleaching process in your work. We hope to understand your knowledge, attitudes and practices about that. The information you provide will be used to raise awareness, give some recommendations and guidelines for decrease diseases related to bleaching process in your work.

Your answers will not be released to anyone and will remain anonymous. Your participation is voluntary and you may choose to stop the interview at any time.

Thank you for your assistance.

Interviewer: Place an X in the box of the selected answer(s).

Do not read responses unless the directions indicate.

A. Socio demographic questions

Q1. What is your name: . . . . . .

Q2. How old are you: . . . . . (years)

Q3. What is your gender?

1. ☐ Male
2. ☐ Female

Q4. What is the highest level of education you have completed?

1. ☐ No school, Literacy classes only
2. ☐ Primary school
3. ☐ Secondary school
4. ☐ High school
5. ☐ College, University

Q5. What is your average family income per month? . . . . . (VND)

Q6. Do you work with rattan bleaching process?

1. ☐ Yes
2. ☐ No (Finish interview)

Q7. How long have you been working in this work? . . . . . .(years)

Q8. How many months do you have bleaching process per year?. . . . . .(months)

Q9. How many times do you have bleaching process per month?. . . . . .(times)

Q10. How long do you spend for each bleaching process? . . . . . .(hours)

Q11. What do you use to bleach rattan?

1. ☐ Sulfur
2. ☐ Others (please explain): . . . . . .(Finish interview)

Q12. How much sulfur do you use each time? . . . . . .(Gram)

Q13. How much rattan do you use each time? . . . . . .(quintal)

B. Knowledge.

Q14. Rattan bleaching process can cause harmful effects to your health do you know that?

1. ☐ Yes
2. ☐ No (Go to Q16)

Q15. Where did you get that information? ***(You may check more than one)***

1. ☐ Newspapers and magazines
2. ☐ Radio
3. ☐ TV
4. ☐ Billboards
5. ☐ Brochures, posters and other printed materials
6. ☐ Health workers
7. ☐ Family, friends, neighbors, and colleagues
8. ☐ Teachers
9. ☐ Others (please explain): . . . . . .

Q16. In your opinion, the following things are true or false.

Please stick True, False or don't know.

No	Statement	True	False	Don't know
1	Burning Sulfur (S) causes some poisonous gas	[ ]	[ ]	[ ]
2	The current process of burning sulfur is safe for workers	[ ]	[ ]	[ ]
3	It is necessary to build oven to bleaching rattan	[ ]	[ ]	[ ]
4	The poisonous element of bleaching process is fungi	[ ]	[ ]	[ ]
5	The poisonous element during the bleaching process is causing the gas of H_2S	[ ]	[ ]	[ ]
6	The poisonous element during the burning process is causing the gas of SO_2	[ ]	[ ]	[ ]
7	The gas from burning Sulfur is only poisonous to respiratory organs	[ ]	[ ]	[ ]
8	The gas from burning Sulfur is not poisonous to skin	[ ]	[ ]	[ ]
9	Wearing gloves does not play the role of poisonous preventive for my skin	[ ]	[ ]	[ ]
10	Wearing face masks or clothing is enough at work	[ ]	[ ]	[ ]
11	I need to wear glasses to avoid effect of sulfur dioxide on eye	[ ]	[ ]	[ ]
12	I need to wear face masks to avoid effect of sulfur dioxide on respiratory	[ ]	[ ]	[ ]
13	Wearing face masks, gloves, glasses, clothing only in picking rattan out is enough	[ ]	[ ]	[ ]
14	Wearing face mask, glove, clothing, glasses can prevent the gas from burning Sulfur	[ ]	[ ]	[ ]
15	Wearing short hand clothing can prevent skin effect of sulfur dioxide	[ ]	[ ]	[ ]
16	Wearing only clothing can prevent effect of sulfur dioxide on skin	[ ]	[ ]	[ ]

C. Attitude.

Q17. What is your opinion with this statement:

No	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	I think it is dangerous when bleaching rattan indoors	[ ]	[ ]	[ ]	[ ]	[ ]
2	In my opinion, it is necessary to change burning area for the whole village	[ ]	[ ]	[ ]	[ ]	[ ]
3	I think it is necessary to have respiratory organs checked by medical workers annually	[ ]	[ ]	[ ]	[ ]	[ ]
4	I think it is necessary to change the current bleaching chemical to less poisonous bleaching chemicals	[ ]	[ ]	[ ]	[ ]	[ ]
5	Workers are needed to be trained of using clothing, gloves, face mask, glasses	[ ]	[ ]	[ ]	[ ]	[ ]
6	In my opinion, health workers should monitor the use of using clothing, gloves, face mask, glasses	[ ]	[ ]	[ ]	[ ]	[ ]
7	In my opinion, face mask is not enough to protect myself from sulfur fumes	[ ]	[ ]	[ ]	[ ]	[ ]
8	I think I can not get skin disease from sulfur fumes	[ ]	[ ]	[ ]	[ ]	[ ]
9	I think I should not continue working if I lack of personal protective equipments	[ ]	[ ]	[ ]	[ ]	[ ]
10	In my opinion, if I wear enough personal protective equipment, I can be protected from sulfur burning.	[ ]	[ ]	[ ]	[ ]	[ ]

D. Practice.

Q18. Have you ever been formally taught or been advised in using personal protective equipment in your work?

1. ☐ Ever
2. ☐ Never

Q19. Do you use any kind of personal protective equipment as shown below while you are working in bleaching process?

Content	Yes	No	Time (year)
1. Respirator (face masks)	[ ]	[ ]	
2. Hand and arm protection (gloves)	[ ]	[ ]	
3. Eye protectors (glasses)	[ ]	[ ]	
4. Foot protection (footwear)	[ ]	[ ]	
5. Clothing	[ ]	[ ]	
6. Nothing	[ ]	[ ]	

Q20. When do you use it in bleaching process?

1= when starting bleaching process 2= in observing bleaching

3= in picking rattans out 4= all the process

Content	1	2	3	4
1. Respirator (face masks)	[ ]	[ ]	[ ]	[ ]
2. Hand and arm protection (gloves)	[ ]	[ ]	[ ]	[ ]
3. Eye protectors (glasses)	[ ]	[ ]	[ ]	[ ]
4. Foot protection (footwear)	[ ]	[ ]	[ ]	[ ]
5. Clothing	[ ]	[ ]	[ ]	[ ]
6. Nothing	[ ]	[ ]	[ ]	[ ]

Q21. How often do you use personal protective equipment while you are working in bleaching process per month?

Content	Never	Sometime	Always
1. Respirator (face masks)	[ ]	[ ]	[ ]
2. Hand and arm protection (gloves)	[ ]	[ ]	[ ]
3. Eye protectors (glasses)	[ ]	[ ]	[ ]

4. Foot protection (footwear)	[ ]	[ ]	[ ]
5. Clothing	[ ]	[ ]	[ ]
6. Nothing	[ ]	[ ]	[ ]

Q22. With any personal protective equipment you neither are nor use, why do you not use them? ***(You may check more than one)***

1. ☐ Unavailable
2. ☐ Unnecessary
3. ☐ Uncomfortable
4. ☐ Nobody uses
5. ☐ Not told
6. ☐ Others (please explain): . . . . . .

Content	1	2	3	4	5	6
1. Respirator (face masks)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2. Hand and arm protection (gloves)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3. Eye protectors (glasses)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4. Foot protection (footwear)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
5. Clothing	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
6. Nothing	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Q23. Do you smoke?

1. ☐ Yes
2. ☐ No (Go to Q27)

Q24. How long have you been smoke? . . . . . (years)

Q25. If yes, how many cigarettes per day? . . . . . .(cigarette)

Q26. Do you smoke during bleaching rattan?

1. ☐ Yes
2. ☐ No

Q27. Do you have periodic health checked?

1. ☐ Yes
2. ☐ No (Go to Q29)

Q28. If yes, when was the last time you have your health checked?

1. ☐ < 3 months
2. ☐ 3 - 6 months
3. ☐ 6 - 12 months
4. ☐ ≥ 12 months

Q29. During the last years, did you get any symptom as shown below?

0. ☐ Nothing
1. ☐ Cough
2. ☐ Wheezing
3. ☐ Shortness breath
4. ☐ Sore throat
5. ☐ Running nose or stuffy
6. ☐ Skin red
7. ☐ Skin itching
8. ☐ Eyes red
9. ☐ Eyes itching
10. ☐ Physical injury (hand, foot, body . . . injury)
11. ☐ Others (please explain): . . . . . .

Thank you very much for participating in our research!

Interviewer (Signature)

Interviewees (Signature)

QUESTIONNAIRE (Vietnamese version)

Phiếu điều tra KAP người dân làng nghề mây tre đan

Mục đích điều tra: Điều tra nhận thức, thái độ, thực hành về sử dụng bảo hộ lao động cá nhân ở những người dân làng nghề mây tre đan.

Mã phiếu: . . . . . Ngày: . . . . / 1 / 2009

Thông tin cung cấp cho đối tượng điều tra:

Chúng tôi mong muốn tìm hiểu về kiến thức, thái độ và thực hành của ông/bà trong việc sử dụng bảo hộ lao động cá nhân nhằm làm giảm tác động có hại tới sức khỏe của chất lưu huỳnh dioxide khi ông/bà thực hiện quá trình tẩy trắng sợi mây. Những thông tin mà ông/bà cung cấp cho chúng tôi sẽ được sử dụng để nâng cao nhận thức của cộng đồng và làm cơ sở cho chúng tôi đưa ra những đề xuất và hướng dẫn cần thiết nhằm làm giảm những tác động sức khỏe bất lợi do công việc tẩy trắng sợi mây đem lại.

Các thông tin mà ông/bà cung cấp sẽ được giữ bí mật. Sự tham gia của ông/bà là hoàn toàn tự nguyện và ông/bà có thể dừng việc trả lời phỏng vấn ở bất cứ thời điểm nào.

Xin cảm ơn vì sự hợp tác của ông/bà.

Phỏng vấn viên chú ý: Đánh dấu X vào khung tương ứng với câu trả lời được chọn

Không đọc các lựa chọn cho đối tượng trừ khi yêu cầu đọc được chỉ ra trong hướng dẫn.

A. Thông tin chung:

Q1. Họ và tên: . . . . . .

Q2. Tuổi: . . . . . (Năm)

Q3. Giới:

1. ☐ Nam
2. ☐ Nữ

Q4. Trình độ văn hóa:

1. ☐ Mù chữ, hoặc chỉ biết đọc biết viết
2. ☐ Tiểu học
3. ☐ Trung học cơ sở
4. ☐ Trung học phổ thông
5. ☐ Cao hơn trung học phổ thông

Q5. Trung bình một tháng, gia đình ông/bà thu nhập bao nhiêu? . . . . . (nghìn đồng)

Q6. Ông/bà có tham gia quá trình tẩy trắng sợi mây?

1. ☐ Có 2. ☐ Không (kết thúc phỏng vấn)

Q7. Ông/bà đã làm tẩy trắng sợi mây bao nhiêu năm: . . . . . .(Năm)

Q8. Trung bình mỗi năm ông/bà làm tẩy trắng sợi mây mấy tháng? . . . . . (Tháng)

Q9. Trung bình mỗi tháng ông/bà làm tẩy trắng sợi mây mấy lần? . . . . . .(Lần)

Q10. Trung bình mỗi lần ông/bà làm tẩy trắng sợi mây mấy tiếng? . . . . . (Giờ)

Q11. Ông/bà sử dụng những hóa chất nào để tẩy sợi mây?

1. ☐ Lưu huỳnh (diêm sinh)
2. ☐ Chất khác (ghi rõ tên hóa chất): . . . . . (kết thúc phỏng vấn)

Q12. Ông/bà dùng khoảng mấy gram lưu huỳnh cho một lần tẩy sợi?. . . . . .(Gram)

Q13. Ông/bà thường tẩy khoảng mấy tạ sợi mây trong một lần?. . . . . (tạ)

B. Kiến thức.

Q14. Ông/bà có biết rằng việc tẩy trắng sợi mây có thể gây tác hại cho sức khỏe không?

1. ☐ Có biết
2. ☐ Không biết (Chuyển câu Q16)

Q15. Ông/bà biết được điều đó từ đâu? ***(Có thể chọn nhiều câu trả lời)***

1. ☐ Báo, tạp chí
2. ☐ Đài
3. ☐ Tivi
4. ☐ Băng rôn, khẩu hiệu
5. ☐ Sách nhỏ, tờ rơi hoặc các tài liệu in ấn khác
6. ☐ Nhân viên y tế
7. ☐ Người thân, bạn bè, hàng xóm, đồng nghiệp
8. ☐ Giáo viên
9. ☐ Nguồn khác (ghi rõ): . . . . . .

Q16. Theo ông/bà, những ý kiến phát biểu sau đây là đúng hay sai?
(Phỏng vấn viên đọc lần lượt để đối tượng trả lời)

Stt	Nội dung	Đúng	Sai	Ko biết
1	Đốt lưu huỳnh làm giải phóng các khí độc	[ ]	[ ]	[ ]
2	Phương pháp đốt lưu huỳnh hiện đang được làm tại xã ông/bà là an toàn cho người đốt	[ ]	[ ]	[ ]
3	Xây lò tẩy sợi là cần thiết	[ ]	[ ]	[ ]
4	Yếu tố gây độc trong quá trình tẩy sợi là nấm	[ ]	[ ]	[ ]
5	Yếu tố gây độc trong quá trình tẩy sợi là khí H_2S	[ ]	[ ]	[ ]
6	Yếu tố gây độc trong quá trình tẩy sợi là khí SO_2	[ ]	[ ]	[ ]
7	Khí được tạo ra do đốt lưu huỳnh chỉ độc với cơ quan hô hấp	[ ]	[ ]	[ ]
8	Khí được tạo ra do đốt lưu huỳnh không độc với da	[ ]	[ ]	[ ]
9	Đeo găng tay khi đốt lưu huỳnh không bảo vệ được da khỏi tiếp xúc với khí độc	[ ]	[ ]	[ ]
10	Đeo khẩu trang hoặc khăn bịt mặt không ngăn được cơ thể tiếp xúc với khí độc	[ ]	[ ]	[ ]
11	Cần đeo kính để tránh không cho chất lưu huỳnh dioxide vào mắt	[ ]	[ ]	[ ]
12	Cần đeo khẩu trang để tránh hít phải chất lưu huỳnh dioxide	[ ]	[ ]	[ ]
13	Đeo khẩu trang, găng tay, kính, và mặc quần áo chỉ cần thiết khi chẻ sợi mây	[ ]	[ ]	[ ]
14	Đeo khẩu trang, găng tay, kính, và mặc quần áo có thể ngăn được cơ thể tiếp xúc với khí độc do đốt lưu huỳnh tạo ra	[ ]	[ ]	[ ]
15	Mặc áo ngắn tay có thể ngăn được chất lưu huỳnh dioxide tác động tới da	[ ]	[ ]	[ ]
16	Chỉ mặc quần áo cũng bảo vệ được da khỏi tác hại của chất lưu huỳnh dioxide	[ ]	[ ]	[ ]

C. Thái độ.

Q17. Ý kiến của ông/bà về những nội dung sau: (Phỏng vấn viên đọc lần lượt để đối tượng trả lời)

Stt	Nội dung	Rất đồng ý	Đồng ý	Ko có ý kiến	Phản đối	Rất phản đối
1	Tẩy sợi trong nhà là rất độc hại	[ ]	[ ]	[ ]	[ ]	[ ]
2	Quy hoạch lò tẩy sợi mây cho cả làng nghề là cần thiết	[ ]	[ ]	[ ]	[ ]	[ ]
3	Việc khám hô hấp định kỳ là rất cần thiết	[ ]	[ ]	[ ]	[ ]	[ ]
4	Cần phải sử dụng loại hóa chất tẩy trắng khác ít độc hơn	[ ]	[ ]	[ ]	[ ]	[ ]
5	Người làm nghề cần được hướng dẫn mặc quần áo bảo hộ, đeo găng tay, khẩu trang và kính khi làm việc	[ ]	[ ]	[ ]	[ ]	[ ]
6	Cán bộ y tế nên giám sát việc mặc quần áo bảo hộ, đeo găng tay, khẩu trang và kính của người làm nghề	[ ]	[ ]	[ ]	[ ]	[ ]
7	Chỉ mang khẩu trang sẽ không đủ để bảo vệ cơ thể khỏi tác động của khói lưu huỳnh	[ ]	[ ]	[ ]	[ ]	[ ]
8	Việc tiếp xúc với khói lưu huỳnh sẽ không có tác hại gì đối với da	[ ]	[ ]	[ ]	[ ]	[ ]
9	Tôi không nên tiếp tục làm nghề nếu tôi không có đủ các trang bị bảo hộ cá nhân	[ ]	[ ]	[ ]	[ ]	[ ]
10	Nếu mang đầy đủ các trang bị bảo hộ cá nhân, tôi sẽ được bảo vệ khỏi tác hại của việc đốt lưu huỳnh	[ ]	[ ]	[ ]	[ ]	[ ]

D. Thực hành.

Q18. Ông/bà đã bao giờ được tập huấn hoặc được khuyên về sử dụng bảo hộ cá nhân khi làm nghề chưa?

1. ☐ Đã từng
2. ☐ Chưa bao giờ

Q19. Ông/bà sử dụng loại bảo hộ nào dưới đây khi làm công việc tẩy sợi?

Bảo hộ	Có	Không	Số năm đã dùng
1. Khẩu trang (Bảo vệ cơ quan hô hấp)	[ ]	[ ]	
2. Găng tay (Bảo vệ bàn tay và cánh tay)	[ ]	[ ]	
3. Kính mắt (Bảo vệ mắt)	[ ]	[ ]	
4. Ủng (Bảo vệ chân)	[ ]	[ ]	
5. Quần áo bảo hộ	[ ]	[ ]	
6. Không sử dụng loại nào	[ ]	[ ]	

Q20. Ông/bà sử dụng trang bị bảo hộ đó trong khâu nào của quá trình tẩy sợi ***(Có thể chọn nhiều câu trả lời)***

1= Khi bắt đầu quá trình tẩy 2= Khi quan sát quá trình tẩy

3= Khi lấy sợi mây ra 4= Trong tất cả các khâu

Bảo hộ	1	2	3	4
1. Khẩu trang (Bảo vệ cơ quan hô hấp)	[ ]	[ ]	[ ]	[ ]
2. Găng tay (Bảo vệ bàn tay và cánh tay)	[ ]	[ ]	[ ]	[ ]
3. Kính mắt (Bảo vệ mắt)	[ ]	[ ]	[ ]	[ ]
4. Ủng (Bảo vệ chân)	[ ]	[ ]	[ ]	[ ]
5. Quần áo bảo hộ	[ ]	[ ]	[ ]	[ ]
6. Không sử dụng loại nào	[ ]	[ ]	[ ]	[ ]

Q21. Mức độ thường xuyên sử dụng các trang bị bảo hộ cá nhân khi làm việc của ông bà là:

Bảo hộ	Không bao giờ	Thỉnh thoảng	Liên tục
1. Khẩu trang (Bảo vệ cơ quan hô hấp)	[ ]	[ ]	[ ]
2. Găng tay (Bảo vệ bàn tay và cánh tay)	[ ]	[ ]	[ ]
3. Kính mắt (Bảo vệ mắt)	[ ]	[ ]	[ ]
4. Ủng (Bảo vệ chân)	[ ]	[ ]	[ ]
5. Quần áo bảo hộ	[ ]	[ ]	[ ]
6. Không sử dụng loại nào	[ ]	[ ]	[ ]

Q22. Với những bảo hộ ông/bà không sử dụng, tại sao ông/bà không sử dụng bảo hộ lao động đó? ***(Có thể chọn nhiều ý)***

1. ☐ Không có
2. ☐ Không cần thiết
3. ☐ Bất tiện
4. ☐ Người khác không dùng nên mình cũng không
5. ☐ Không trả lời
6. ☐ Lý do khác (ghi rõ): . . . . . .

Bảo hộ	1	2	3	4	5	6
1. Khẩu trang (Bảo vệ cơ quan hô hấp)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2. Găng tay (Bảo vệ bàn tay và cánh tay)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3. Kính mắt (Bảo vệ mắt)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4. Ủng (Bảo vệ chân)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
5. Quần áo bảo hộ	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
6. Không sử dụng loại nào	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Q23. Ông/bà có hút thuốc lá, thuốc lào không?

1. ☐ Có
2. ☐ Không (Chuyển câu Q27)

Q24. Ông/bà đã hút thuốc lá, thuốc lào trong bao nhiêu năm? . . . . . năm

Q25. Nếu có, ông bà hút bao nhiêu điếu một ngày? . . . . . điếu

Q26. Ông/bà có hút thuốc trong quá trình tẩy trắng sợi mây không?

1. ☐ Có
2. ☐ Không

Q27. Ông bà có định kỳ đi khám sức khoẻ không?

1. ☐ Có
2. ☐ Không (Chuyển câu Q29)

Q28. Nếu có, lần gần nhất ông bà đi khám sức khoẻ là bao giờ?

1. ☐ < 3 tháng
2. ☐ 3 - 6 tháng
3. ☐ 6 - 12 tháng
4. ☐ ≥ 12 tháng

Q29. Trong khoảng 1 năm qua, ông/bà có những biểu hiện nào dưới đây không?

0. ☐ Không
1. ☐ Ho
2. ☐ Thở khò khè
3. ☐ Thở gấp (khó thở)
4. ☐ Viêm họng
5. ☐ Chảy nước mũi/ngạt mũi
6. ☐ Da đỏ (sẩn da)
7. ☐ Da ngứa
8. ☐ Mắt đỏ
9. ☐ Mắt ngứa
10. ☐ Chấn thương (bàn tay, bàn chân, thân mình….)
11. ☐ Triệu chứng khác (ghi rõ): . . . . . .

Cảm ơn ông/bà đã tham gia nghiên cứu của chúng tôi!

Người phỏng vấn	**Người được phỏng vấn**
(Ký tên)	(Ký tên)

APPENDIX C

SCHEDULE ACTIVITIES

RESEARCH PROCESS	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
LITERATURE REVIEW	→							
WRITING PROPOSAL		→						
PROPOSAL EXAM			→					
REVISE PROPOSAL			→					
PRETEST AND REVISE QUESTIONNAIRE				→				
DATA COLLECTION				→				
DATA ANALYSIS					→			
WRITING REPORT					→			
SUBMIT FOR FINAL EXAM						→		
THESIS DEFEND						→		
REVIRION							→	
SUBMIT FINAL THESIS							→	

APPENDIX D

ADMINISTRATION COST

No	Activities	Unit	Price (baht)	Unit (Number)	Total Budget (Baht)
1.	Air fair: BKK – HN – BKK	Trip	7,000/tr	2 trips	14,000
2.	Pre-testing				
	- Photocopy	Quest.	1/page	6 x 40	240
	- Stationery	Set	300/set	1	300
3.	Data Collection:				
	- Interviewer training	Person	200/p/d	5 prs/day	1,000
	- Health volunteers (guide)	Person	100/p/d	5 prs x 7days	3,500
	- Photocopy	Quest.	1/page	6 x 400	2,400
	- Transportation cost	Trip	1,000/day	7 days	7,000
	- Interviewers per diem	Person	400/p/d	5 prs x 7days	14,000
	- Gift for interviewees	Person	20/p/d	420 prs	8,400
	- Data Processing	Person	200/p/d	2 prs x 3days	1,200
4.	Document Printing:				
	- Paper + Printing	Page	56/page	800 pages	4,000
	- Photocopy (exam +final submit)	Page	1/page	10 x 400	4,000
	- Stationery	Set	300/set	1 set	300
	- Binding Paper (exam)	Set	100/set	5 sets	500
	- Binding Paper (submit)	Set	200/set	6 sets	1,200
T O T A L					**62,040**

BIOGRAPHY

Mr. Truong Cong Dat was born on the 05 March, 1981, in Hoabinh province, Vietnam. He received a Bachelor of Medicine in Medical Doctor in 2005 from Thaibinh Medical University, Vietnam. After graduated he worked as a lecturer of Public Health in Faculty of Public Health, Thaibinh Medical University, Vietnam. He continued his study for a Master of Public Health in Health Systems Development supported by Thailand International Development Cooperation Agency (TICA) in College of Public Health Sciences, Chulalongkorn University in 2008 and completed the program in 2009.