JOB STRESS AMONG POLISHING WORKERS USING DEMAND-CONTROL MODEL

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ABSTRACT

This cross-sectional study aimed to assess and compare job stress levels of polishing workers using the Demand-Control Model. A total of 91 workers (41 working at the Bronze ware group in Pradittorakan community Bangkok (informal workers), and 50 working at the toy factory in Pathumthani Province (formal workers)) completed a Thai version of Karasek's Job Content Questionnaire (Demand –Control Model). Two scales in the Job Content Questionnaire were used to examine job stress, namely: psychological job demands and job control or decision latitude.

The mean age of the two groups of workers was 38.25 years. Fourty-two percent of the formal workers and 26.8% of the informal workers had high levels of stress. Job control, physical job demands, job insecurity and coworker support were significantly related to job stress ($p < 0.05$). Personal background such as age, education, years of work experience, and income were significantly related to stress level ($p < 0.01$).

The study found no significant difference ($p > 0.05$) in the stress levels in either group. It is recommended that workplaces should have a plan to decrease job stress of workers such as job stress management programs and social activities programs to promote good relationships between workers and supervisors.

KEY WORDS: JOB STRESS / DEMAND-CONTROL MODEL / POLISHING WORKER

64 pp.

การศึกษาความเครียดจากการทำงานในคนงานขัดชิ้นงานโดยใช้แบบจำลองDEMAND-CONTROL (JOB STRESS AMONG POLISHING WORKERS USING DEMAND-CONTROL MODEL)

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บทคัดย่อ

การศึกษาภาคตัดขวางมีวัตถุประสงค์เพื่อเปรียบเทียบระดับความเครียดจากการทำงานในคนงานขัดชิ้นงานโดยใช้แบบจำลอง DEMAND-CONTROL กลุ่มตัวอย่างมีจำนวน 91 ราย ทำงานในชุมชนที่ทำเครื่องทองลงหินจำนวน 41 ราย ซึ่งจัดเป็นแรงงานนอกระบบ ขณะที่กลุ่มของแรงงานในระบบเป็นพนักงานที่ทำงานในโรงงานทำของเล่นอีก 50 ราย ที่ตอบแบบสอบถาม วัดความเครียดจากการทำงานของ Karasek โดยใช้มาตรวัดความเครียดจากการทำงาน 2 ส่วน คือ ความต้องการทางด้านกายภาพจากการทำงาน และ การควบคุมงาน หรือ อำนาจการตัดสินใจในงาน

อายุเฉลี่ยของกลุ่มตัวอย่างเท่ากับ 38.25 ปี ระดับความเครียดของกลุ่มตัวอย่างในคนงานในระบบ (42%) และคนงานนอกระบบ (26.8%) อยู่ในระดับสูง และพบว่าการควบคุมการทำงาน ความต้องการทางด้านกายภาพจากการทำงาน ความไม่มั่นคงในงาน และ การสนับสนุนจากเพื่อนร่วมงานของทั้งสองกลุ่ม มีความสัมพันธ์กับความเครียดจากงานอย่างมีนัยสำคัญทางสถิติ ($p < 0.05$) ข้อมูลส่วนบุคคล เช่น อายุ การศึกษา ประสบการณ์การทำงาน และ รายได้ สัมพันธ์กับระดับความเครียดอย่างมีนัยสำคัญทางสถิติ ($p < 0.01$) ผลการศึกษา พบว่าระดับความเครียดในการทำงานของทั้งสองกลุ่มไม่มีความแตกต่างกันทางสถิติ ($p >0.05$) ข้อเสนอแนะจากการศึกษานี้ คือ ควรมีการวางแผนจัดกิจกรรมในการลดระดับความเครียดจากการทำงาน เช่น โปรแกรมการจัดการความเครียด กิจกรรมส่งเสริมความสัมพันธ์ที่ดีระหว่างเพื่อนร่วมงานและหัวหน้างานสำหรับแรงงานในระบบ

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CHAPTER I
INTRODUCTION

1.1 Background and rational

Worldwide, there have been increasing concerns with job stress and its adverse health effects. Job stress is a major problem in many countries, both developing and industrialized, in the West and in Asia. In recent years more attention has been paid to the relationship between work organization and job stress. Workplace stress has been identified as a serious cause of individual suffering and commercial loss. Excessive stress in the workplace can have undesirable consequences on mental and physical health.

Job stress (job strain) is becoming an increasingly important occupational health problem and a significant cause of economic loss, greatest cause of occupational disease. (1) Stressful working conditions can also have an indirect impact on employee well being by limiting an individual's ability to make positive changes to lifestyle behaviours or by directly contributing to negative health behaviors. (2) Job strain can be defined as the harmful physical and emotionally responses that occur when the requirements of the job do not match the capabilities, or needs of worker. No job is free from stress and all types of work bring responsibilities, problems, demands and pressures. In normal circumstances, it is an unavoidable part of working life.

In Thailand, the number of workers in the informal secter is increasing due to the expansion of economic and the government policies that encourage people to work in their own homes or communities.The statistic of year 2005, the estimated number of workers working in the informal sector is 22,536,500 persons or about 62.1 percent of the employed population. (3) Informal sector provides many benefits to country both at macro and micro levels. However, informal workers still face with a lot of problems such as unclear status, unsecured work condition,low in come,inappropriate work environment, no social and legal protection,lack of responsible organization.(4) The polishing process is the common work in the industrial sector both in the informal and

formal sector. It enables surface smoothness which related to the equipment production such as in the metal, plastic and glass manufacturing. It was found in the informal sector as well. The well recognized of occupation hazard is dust and working posture whereas there is limited research about job stress among these groups of workers in Thailand. So it is very interesting to conduct this study. It is essential to study level of job stress of workers in order to enhance, develop and protect the quality of working life for them. So they may have a healthy live and reduce occupational injuries and illness. It definitely leads the productivity of the workplace.

1.2 General objective

To compare the stress level of informal group and formal group.

1.3 Specific objectives

1.3.1 To assess the stress level among workers working in polishing process.

1.3.2 To identify the personal background and working factors that related to the stress level in the formal group.

1.3.3 To identify the personal background and working factors that related to the stress level in the informal group.

1.3.4 To study the stress level among polishing process workers in the formal and informal sector.

1.3 Hypotheses

There is difference of stress level between informal and informal group.

1.5 Variables

1.5.1 Independent variable: General characteristics, Lifestyle factors, Psychosocial job factors.

1.5.2 Dependent variable: Job Stress level.

1.6. Scope and limitation of the study

The study is limited only workers in bronze ware group and toy factory performed polishing work.

1.7 Operational definition

Informal Sector	Defined as labors working in bronze ware group who making bronze ware products which orders from the bigger business As type of work concentrates most on polishing process . The National Statistic Office identified informal sector as labors working in informal economic that has uncertain employment status, financial and non-protection from labors protection.
Formal Sector	Defined as labors working in toy factory, which has concrete structure, systematic recruitment, management and employment process. The factory are registered, regulated or protected by existing legal and has social welfare and clear job description.
Workers	Personnel who performed polishing work in bronzewear group and toy factory.
Job stress	Defined as the harmful physical and emotional response that occurs when the requirements of the job do not match the capabilities, resources, or needs of the worker.
Demand-Control Model	The job strain model, which mentioned that job strain results from the interaction of two main dimensions of the work environment: psychological demands and decision latitude (control).It can predict health and behavior, which are consequence of work structure.

1.8 Conceptual framework

General characteristics: gender, age, education level, marital status, income, number of children, and work environment. Lifestyle factors: working hours, number of meals, smoking, alcohol drinking, and exercise. These factors are assumed to affect job stress, which measure from Job Content Questionnaire.

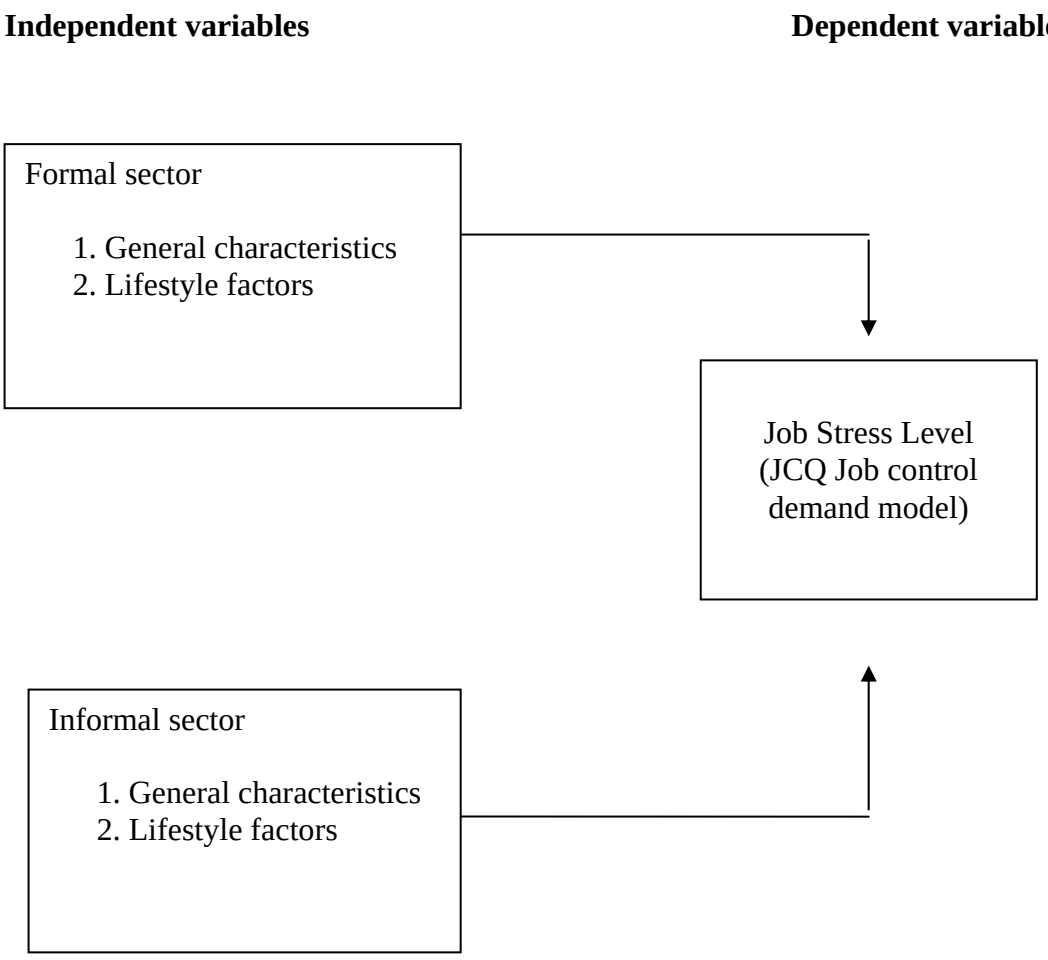

Figure 1-1 Conceptual framework

CHAPTER II
LITERATURE REVIEW

The review of literatures and researches supported the study of level of stress among workers working in polishing process in the formal and informal sector.

2.1 Stress

The word ***stress*** has many definition based on various perspectives of the human condition. Root of the word ***stress*** comes from ***stringere*** in Latin language, which means pressure, tension or endeavor. The word “stress” (5) in common English usage means conditions which causing hardship or times of trouble, danger and tension.

Stress is a situation when people feel depressed, confused, uncomfortable and afraid concerned or feel like being forced to do or not to do something. It happens when people perceive something that comes to their lives causing harmful mental or physical then they lose mental or physical balance. When people have stress, they have different ways of response such as defense mechanism, physical changes in behavior, ways of thinking and feeling. These responses are helped to reduce stress and bring back to balance. (6)

Stress can be defines as stimulus or change in the internal or external environment of such a degree, in term of strength, intensity or duration, as to tax the adaptive capacity of the organism to its limit, and which in certain circumstances can lead to a disorganization of behavior or a dysfunction, which may lead to disease. (7)

This study highlights important aspects of job stress. Job stress defined as the harmful physical and emotional response that occurs when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health and even injury. Long-term exposure to job stress has been linked to an increased risk of musculo-skeletal disorders, depression, and job burnout, and may contribute to a range of debilitating diseases, ranging from cardiovascular disease to cancer. Stressful working conditions also may interfere with an employee’s ability to

work safely, contributing to work injuries and illnesses. In the workplace of the 1990s, the most highly ranked and frequently reported organizational stressors are potential job loss, technological advances, and ineffective top management. At the work unit level, work overload, poor supervision, and inadequate training are the top-ranking stressors.

Job stress focuses on job features that pose a threat to the worker (8). Threat may be due to excessive job demands, insufficient supplies to meet workers' needs, or the possibility of loss. When the job requires too much work in too short a time, job overload exists. Supply deficits concern things workers expect from their jobs: adequate salary, job satisfaction, and promotion or growth in the job. A threat of loss may include demotions, unattractive relocations, or outright severance from the job (9). Related to work environment, job stress is work work demands that exceed the worker's coping ability. At a broader level, job stress involves interactions of work conditions with worker traits that change normal psychological or physical functions or both. (10,11)

First, work stress generally involves both the organization and its workers. Job stress is not private matter for the worker to deal with alone and in isolation. Workers may transport personal and family problems to the job, but work problems also spill over the home. Second, job stress produces negative effects for both the organization and the workers. For the organization, disruption in normal operation, lowered performance and productivity, and lower margins of profit. For the workers, the effects are threefold: increased physical health effect, psychological distress, and behavioral changes. Problems with health may not be so much related to the onset of a specific disease but to the quiet and gradual loss of health. Psychological distress usually comes with loss of job satisfaction and several related negative emotions. The resulting changes in behavior tend to affect both productivity within the company and lifestyle outside the workplace. Third, job stress requires both organization and personal solutions (43) Workers assistance programs that concentrate solely on the worker perpetuate the myth that job stress is the worker's problem and the worker's fault. Removing job stress also requires some intervention and change in the organization.

2.2 Type of stress

There are 2 types of stress: (12)

1. Physical stress: a stress that occurs from something that threatens the body's tissue and stimulate hypothalamus gland to produce various physical phenomena through sympathetic nervous system. It causes a physical syndrome such as headache, insomnia. Examples of this kind of stress stimulus are heat, cold and noise, which defined as emergency or continuing stress. (13)

2. Psychological stress: a mental process resulting from conflicts, frustration, worries, or from severe mental disturbance. This kind of stress can occur when a person exciting. It will strain muscles and make heart beating fast. This reaction based on past experiences through mental process.

2.3 Causes of stress

Causes of stress or stressor are in several differences because a stress situation causes different amount of stress in each person. Davidson and Cooper (14) described that there are 4 causes of stress

1. Working: There are works type and factors, role in organization, job promotion, relationships at work and social support and work structure and climate
2. Family: There are marriage relation, home environment, neighborhood, family and social support from family, neighbor or closed friend
3. Social: There are conditions, food, travel, urban living and hobby
4. Person: Person is individual characteristic such as age, education and religion, the stress coping and life events

2.4 Health effects of work stress

Terry Beehr and John Newman (11) reviewed many job stress studies and concluded that three negative personal outcomes result from work stress such as Psychological health symptoms, physical health symptoms and behavioral symptoms.

2.4.1 Psychological Symptoms of Work Stress

The following symptoms occur in various occupational settings as a result of work stress.

- Anxiety, tension, confusion, and irritability
- Feelings of frustation, anger, and resentment
- Emotional hypersensitivity and hyperreactivity
- Suppression of feelings, withdrawal, and depression
- Reduced effectiveness in communatication
- Feelings of isolation and alienation
- Boredom and job dissatisfaction
- Mental fatigue, lower intellectual functioning, and loss of concentration
- Loss of spontaneity and creativity
- Lowered self-esteem

Withee Phoosit (2003) had studied the influencing factors on job stress of non-commissioned police officers in metropolitan police stations in Bangkok. The results indicated that non-commissioned police officers had job stress related to psychological symptoms and physical symptom in a moderate level.(44)

2.4.2 Physical Symptoms of Work Stress

According to Cordes and Dougherty, 1993 and Latack and Kiniki, 1995 identified physical symptoms of work stress as the following.

- Increased heart rate, blood pressure, and potential cardiovascular disease
- Increased secretions of stress hormones (adrenaline and noradrenaline)
- Gastrointestinal disorders such as irritable bowl syndrome, colitis, and ulcers
- Increased frequency of bodily injuries and accidents
- Physical fatigue, and possible chronic fatigue syndrome
- Respiratory problems, including aggravation of existing conditions
- Skin disorders
- Headaches, low back pain, and muscular tension

- Sleeve disturbances
- Impaired immune function, including possible increased risk for cancer

Isabelle Niedhammer et al. (1998) examined in women and men relations between psychosocial work variables (psychological demands, decision latitude, and social support) and cardiovascular risk factors (hypertension hyperlipidemia, diabetes, overweight, smoking, and alcohol consumption). The results found that psychosocial work factors were significantly associated with hypertension hyperlipidemia, overweight, smoking, and alcohol consumption.

Myung Gun Kang et al. (2005) had studied job stress and cardiovascular risk factors in male workers. The results found that job strain (the combination of high work demand with low decision latitude) was significantly related to higher levels of homocystein after controlling for age, BMI, smoking, and social support at workplace.

2.4.3 Behavioral Symptoms of Work Stress

Several behavioral symptoms reveal job stress. These including the following

- Procrastination, work avoidance, and absenteeism
- Lowered performance and productivity
- Increase alcohol and drug use and abuse
- Outright sabotage on the job
- Overeating as escape, leading to obesity
- Under eating as a withdrawal and sudden weight loss, probably combined with sighs of depression
- Increased risk-taking behavior, including reckless driving and gambling
- Aggression, vandalism, and stealing
- Deteriorating relationships with family and friends
- Suicide or attempted suicide

Knudsen HK investigated job stress and poor sleep quality. They found that poor sleep quality, work overload was positively associated with the frequency of poor sleep quality. Role conflict was positively associated with difficulty initiating sleep and non-restorative sleep. Repetitive tasks were associated with more days of

difficulty initiating sleep and maintaining sleep. Job autonomy was negatively associated with non-restorative sleep.

2.5 The sources of occupational stressors

There are three kinds of stressors in working area that affect stress levels.

2.5.1 Organizational stressors:

2.5.1.1 Low pay and lack of job satisfaction. Low pay can cause poor self-image, less concentration, less energy.

2.5.1.2 Lack of Career Guidance: most people would like to fully use the skills they already have and develop more skill.

2.5.1.3 Overspecialization: the risk of overspecialization can be found in assembly line jobs and nursing, wish to see the patient through all stages of recovery. It is not easily possible to find intrinsic reward for a job, which is too narrow and specialized.

2.5.1.4 Work Overload: more stress would be expected from the job that lack of autonomy and flexibility, too many inflexible deadlines. The type of overload such as quantitative (such as lack of time), qualitative (such as work which is beyond one's present capabilities, e.g. R&D, healthcare and law) and quantitative plus qualitative, such as all positions of management, sales, entrepreneurial industry. The conditions lead to overload is time pressures, job complexity, and complex decision-making.

2.5.1.5 Time Urgency, for example: deadlines (e.g. projects, reports, sales), seasonal work, and unit production quotas (e.g. telephone operators, assembly line). These cause over arousal, worry about not doing it properly.

2.5.1.6 Job Complexity: high job complexity is high stress. Factors responsible for increasing job complexity are more information, which need to be used, more sophisticated information (e.g. evidence-based medicine), more detailed job procedures, and introduction of contingency plans.

2.5.1.7 Decision-making depending on the importance of the decision, complexity of the decision, e.g. have to decide what is necessary and sufficient, how much information must be used in making decision: either too much or too little information is problematic which cause psychological strain.

2.5.2 Individual Stressors

2.5.2.1 Occupational Frustration: if the organization fails to let employees use their skills effectively and does not allow them to grow (or help them in making career situations), frustration is created.

2.5.2.2 Job Ambiguity and Role Conflict caused by work objectives which are not clear, lack of clear understanding of responsibility, working procedures which are not laid out clearly, conflicting (or unknown) expectations as to work performance, no feedback as to performance, role conflict is a major problem, when employee is expected to be two (or more) different kinds of people.

2.5.2.3 Stifled communication is major problem in work situation such as: isolation, important information coming in too late (or not at all), deliberate obfuscation of communication, instead of information flowing up and laterally, some organizations only allow downward flow of information and neglects what the person on the front line has to offer to a solution, some stress created.

2.5.2.4 Discrimination: hiring, pay and promotion are hot topic in today's work world and working middle class members concerned about occupational discrimination.

2.5.2.5 Bureaucracy also causes stress. The characteristics of bureaucracy such as specialization, organizational rules to ensure uniformity and stability, emotionless management, positional hierarchy and centralized authority. The criticisms of bureaucracy may occurred from retards personal and professional development, creates mediocrity, poor communication, too much paperwork, impersonal handling of people. Arbitrary rules which are meaningless and frustrating. Lower creativity.

2.5.2.6 Inactivity and Boredom at Work. The occupational settings likely to create boredom such as assembly line work. Tasks are repetitive: require little training, quickly become boring. Compensatory stimulation often affects performance of the job. The physical symptoms such as nausea, weakness, headache, vision problem, probably due to job boredom, repetitive tasks, poor communication with coworkers and low job satisfaction.

2.5.3 Environmental stressors

Environmental stressors related to physical environment of the job (e.g. noise, dust), location in the community (e.g. in the bad part of the town, downwind from other industry) and location of the community itself. The environmental stressors in workplace can be identified into:

2.5.3.1 Occupational change and adaptation.

2.5.3.2 Technological change: virtually all industries and all jobs have been affected by technological change, requires more education.

2.5.3.3 Relocation: according to Holmes and Rahe, 1968, moving is the lowest third of life stressors, however, business readjustment, change in financial status and change in job responsibilities are higher. The employee who have physically move to another town, results to losing old friends, making new friends needed, and have to adjust to new socioeconomic conditions.

2.5.3.4 Promotion: promotion requires adaptation, therefore creates stress:

2.5.3.5 Reorganization and downsizing. Whenever an organization changes due to reorganization or purchase by another. There are stress of insecurity, anticipation and apprehension. Frequently, people are concerned with making themselves for good looking to the new management.

2.5.3.6 Violence in the Workplace such as homicide, physical assault & battery, sexual assault, threats, verbal abuse, threatened violence.

2.5.3.7 Retirement, in retirement identity loose and may cause depression, loss of self-esteem, appetite reduction, lower motivation, lower sex drive. The US Bureau of Labor Statistics, 1995 report forcibly retired workers only survive for 30-40 months after retirement.

2.5.4 Biological stressors

In the workplace, biological stressors included time change or work hours, jet lag which mostly affects executives and airline flight crews, shift work and fatigue (work shift is between 11 pm-7am). The effects of shift work such as cardiovascular disease, neuroticism, depression, poor appetite, diarrhea and constipation. Noise, lighting and temperature also included in biological factors.

According to Table 2-1 explain the summary of major job stressor, contributing factors and possible consequences.

Table 2-1 Summary of major job stressors (26)

Job stressors	Contributing factors	Possible consequences
Job conditions	Quantitative work overload Qualitative work overload Assembly-line hysteria People decisions Physical dangers Shift work Technostress	Physical and/or mental fatigue Job burnout Increased irritability and tension
Role stress	Role ambiguity Sex bias and sex-role stereotypes Sexual harassment	Increased anxiety and tension Lowered job performance
Interpersonal factors	Poor work and social support systems Political rivalry, jealousy or anger Lack of management concern of worker	Increased tension Elevated blood pressure Job satisfaction
Career development	Underpromotion Overpromotion Job security Frustrated ambitions	Lowered productivity Loss of self-esteem Increased irritability and anger Job dissatisfaction
Organizational Structure	Rigid and impersonal structure Political battles Inadequate supervision or training Nonparticipative decision making	Lowered motivation and productivity Job dissatisfaction
Home-work interface	Spillover Lack of support from spouse Marital conflict Dual-career stress	Increased mental conflict and fatigue Lowered motivation and productivity Increased marital conflict

2.6 Job Stress Model

Two models were well accepted for the evaluation of job stress level, namely: the PE Fit Model and the Job Demand Control Model.

2.6.1 Person-Environment (PE) Fit Model

The Person-Environment (P-E) Fit model, developed in the early 1970s by researchers at the University of Michigan, states that strain develops when there is a

discrepancy between the motives of the person and the supplies of the environment (job), or between the demands of the job and the abilities of the person to meet those demands. Motives include factors such as participation, income, and self-utilization. Demands include workload and job complexity (20,21,23).

The major test of the P-E Fit model was a cross-sectional study of 2010 workers in 23 occupations (21). However, these were not a random sample of American occupations, no objective measurements of the work sites were obtained, and the response rate was as low as 25% for some of the occupations. The most important stressor appeared to be workload excess, job complexity misfit, underutilization of abilities, and unwanted overtime. Assemblers and relief workers on the machine-paced assembly lines had the highest stress and strain of any of the 23 occupations. However, the P-E Fit measures together contributed only 1.5-14% additional variance beyond the environment and person questions, separately (20). The investigators warned that the P-E Fit variables supplement, but do not replace, the predictive power of the component measures (22).Blau, Gary J. used a sample of registered nurses (N=228) from a large urban hospital; this longitudinal study tested the applicability of a person-environment fit model for predicting job involvement and organizational commitment. Results indicated the proposed person-environment fit model is useful for predicting job involvement, but not organizational commitment.

2.6.2. Job Control Demand Model (Job Strain Model)

Job strain model was developed by Robert Karasek (15) that has highlighted two key elements of these stressors, and has been supported by a growing body of evidence. Demand-Control Model or Karasek's Job strain model states that the greatest risk to physical and mental health from stress occurs to workers facing high psychological workload demands or pressures combined with low control or decision latitude in meeting those demands. Job demands are defined by questions such as "working very fast", "working very hard", and not "enough time to get the job done". Job decision latitude is defined as both the ability to use skills on the job and the decision-making authority available to the worker. In some recent studies, this model was expanded to include a third factor-the beneficial effects of workplace social support. (16)

Demand latitude: is defined as psychological job demand that has stressors arising from personal conflict. The research perspective is associated with job-related stress for instance, role overload, role conflict, role ambiguity, load information, and physical and skill utilization.

Decision latitude: is defined as the combination of job decision-making authority and use of skills on the job.

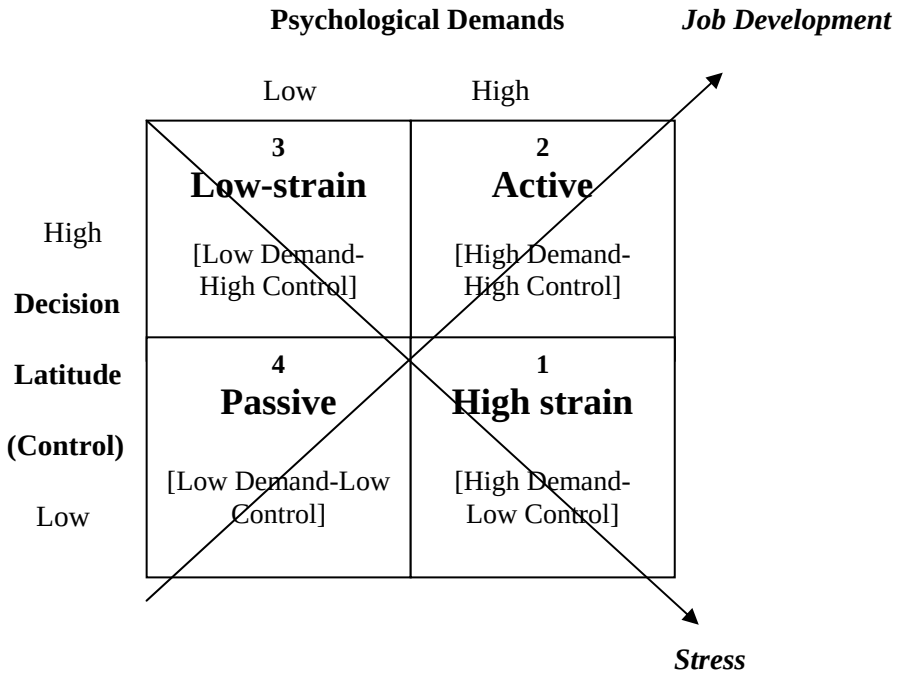

Figure 2-1: Demand-Control Model (Job Strain Model)

Figure 2-1, The job strain model that shows the psychological job demand, skill discretion, and decision authority can predict health and behavior, which are consequence of work structure. The model has 2 dimensions and devided to 4 types of psychosocial in work, which devided by interaction between psychosocial job demand and decision latitude, four-typesnare high strain job, active job, low strain job, and passive job. Each type of job strain was described by Karasek (17) about what is

thedimension compositions and how it effect to stress, health, illness, diseases and relation with job environments or structures as followings (18,19):

Quadrant 1: High strain; High psychological demands, low decision latitude, and low social support. High strain job is the situation that someone has high psychological job demand to meet some objective, targets need, or goal. But in that situation he has only few control that sufficient for responsible to the demand which functions as stressors then it causes stress and physical response.

E M de Croon et al. (2002) had studied job stress, fatigue, and job dissatisfaction in Dutch lorry drivers: towards an occupation specific model of job demands and control. The results found that job control buffered the positive reflection between qualitative workload and job dissatisfaction.

Bultmann U et al. (2002) the relationship between psychosocial work characteristics and fatigue and psychological distress, and found that lower decision latitude and low social support at work were associated with fatigue in both men and women.

Ferrario M et al. (2003) had studied reliability of the Karasek scale in the assessment of perceived occupational stress and gender-related differences in scores. The results suggest that the Karasek's JCQ is an effective tool to describe perceived job stress conditions.

Tsutsumi A et al. studied low control at work and the risk of suicide in Japanese men by using a job demand-control model questionnaire; low control at work was revealed as a predictor of suicide death among Japanese male workers. The finding implies that job redesign aimed at increased worker control could be a worthwhile strategy in preventing, or at least reducing, the risk of suicide death.

Quadrant 2: Active job; high psychological demands, and high decesion latitude.

Active job is the situations that have intensely demanding which related to the workers in activities over which they feel a large measure of control the freedom to use all available skills. From such jobs it can be predicted an optimistic set of psychosocial outcomes learning and growth that are conductive to high productivity.

Quadrant 3: Low strain job; Low psychological demands, high decision latitude and high social support.

Low strain job is the highly desirable state just described is hardly a situation of relaxation, as necessary as the latter, high strain and active jobs, is. This group was predicted that lower than average levels of residual psychological strain and risk of illness, because job decision latitude allows the individual to respond to each challenge optimally, and because there are few challenges to begin with. This is almost too good to be true, yet it does characterize certain jobs of repair personnel.

Quadrant 4: Passive job; Low psychological demands and low decision latitude.

Which characterize with no energetic responses but that have none of desirable aspects of relaxations of low strain jobs. This group is a professional-level employee, previously involved in very active jobs, whose current unemployment has lead to apathetic behavior because of challenge that seemed completely beyond his control.

Passive jobs setting is the second major psychosocial work problem, which is the nature of injury it induces or the strategies to eliminating it as same as for high strain job. Loss skills, lack of job challenges and environmentally rigid restrictions preventing workers from testing their idea to improve the work process and result in long- term loss of work motivation and productivity. Passive job has an average level of psychological strain and illness risk as active jobs, and although stressor exposure would result in substantial residual psychological strain as high strain jobs, but low demand of passive job means that fewer stressors are confronted.

2.7 Informal sector

Definition of Informal sectors has been given by several organizations. International Labor Organization [ILO] defines as labors working in a small economic sector that easy to establish and always use input products from inside the country. As type of work concentrates on easy applying to use and unprotected from the government. The National Statistic Office identified informal sector as labors working in informal economic that has uncertain employment status, financial and non-protection from labors protection.

The ILO international symposium on the informal sector in 1999 proposed that the informal sector workforce can be categorized into three broad groups:(1) owner-employers of micro enterprises, which employ a few paid workers, with or without apprentices; (2) own-account workers. Who own and operate one-person business, who work alone or with the help of unpaid workers, generally family members and apprentices; and (3) dependent workers, paid or unpaid, including wage workers in micro enterprises, unpaid family workers, apprentices, contract labor, home workers and paid domestic workers. (47)

Arphorn S and Tangtong C studied the impact of the implementation of clean technology for the improvement of the quality of life in the informal sector in 4 occupations. They concluded that most of the workers had active job and showed high co-worker support. (37)

Randall Mesler and Marc Capobianco. (2001) Studied psychosocial factors associated with job stress in self-employed women versus women in upper levels of management within the corporate context. The results found that 36% of the women in upper management experiencing job stress, while 33% of women who were self-employed experiencing job stress. Both group had a similar degree of job strain (36% upper management vs 33% self-employed).

Hsiu-Chuan Shen et al. (2005) had studied occupational stress in nurses in Psychiatric Institutions in Taiwan in 2001.The result concluded that nurses in Psychiatric Institutions are under significant stress related to work factors.

CHAPTER III
MATERIALS AND METHODS

This chapter describes the research method employed in this study. It was included study design, study population, sample size, research instruments, data collection procedure and data analysis.

3.1 Study design

This study aimed to identify stress level comparative among workers working in one community bronze ware group and workers working in one toy factory. The study design was a cross-sectional study.

3.2 Study population

The populations of this study were 40 bronze ware workers who worked at one community bronze ware group Pradittoragarn community Soi Paholyothin 47 Bangkok, and 50 factory workers at toy factory in Navanakorn Industrial Estate Zone three in Pathumtani Province.

Inclusion criteria

- Workers have worked at least 6 months before conducting this survey.
- Agree to participate and informed consent for the study.

Exclusion criteria

- The workers, who were diagnosed as mental health disorder, were excluded.

3.3 Sample size

The estimate sample size was calculateed from the following formula

$$N = \left[\frac{(Z_\alpha \sqrt{p_0(1-p_0)} + Z_\beta \sqrt{p_a - (1-p_a)})^2}{(p_a - p_0)^2} \right]$$

Where, n = the estimate sample size

α = The level of statistical significance was set at 0.05

Z_α = 1.64

$\beta = 0.1, Z_\beta = 1.28$

P_0 = 0.236 percentage of stress level from previous study (36)

P_a = 0.472 expected percentage of stress level in informal workers

$$N = \left[\frac{(1.64\sqrt{0.236(1-0.236)} + 1.28\sqrt{0.472(1-0.472)})^2}{(0.236)^2} \right]$$

= 32

Estimated drop out = 20%

N/group after correction dropout = 32/0.8 = 40

Therefore about 40 subjects were required for this study

3.4 Research instruments

Questionnaire was composed of 3 parts as follows:

Part I: General background characteristics, which contains questions of demographic profile and general information of sex, age, education level, marital status, number of children, monthly income, residential, health status, and work environment.

Part II: Lifestyle factors. This part includes working hours, number of meal, exercise, smoking and drinking habit.

Part III: Job Stress This part was a questionnaire modified from Karasek'sJob Content Questionnaire.The Job Content Questionnaire (JCQ) based on the demand-control model developed by Karasek and Theorell (15) has been used for the assessment of job stress conditions. The job stress measure was derived from Karasek's JCQ 1.7 (revised 1997). The questionnaire included 27 items, which comprised a minimum set of questions for assessing of five scales-job control, psychological job demands, physical job demands, job insecurity, and workplace social support. Cronbach'Alpha tested all data for reliability. The Alpha coefficient was 0.829

3.4 Data collection procedure

Data were collected through the following steps:

1. Coordinate with the head of group workers in bronze ware group and personal manager of toy factory for cooperation in data collection in area; prepared questionnaires for data collection checked the correctness and status of equipment.
2. Had an appointment with workers for group interview questionnaire.
3. Before beginning data collection, all workers were explained the objectives of this study and the content in the questionnaire.
4. Questionnaire was filled up and returned to data collector right away.

3.4 Data analysis

Scoring and classification

The job control or the decision latitude scale was the sum of two sub-scales: skill discretion, measured by six items, and decision authority, measured by three items. Five items measure the psychological job demands scale. Two items measured physical job demands scale and three items measured job insecurity scale. The workplace social support scale was the sum of two sub-scales: support from supervisors and four items measure support from coworkers, both. For each item, the

response was recorded on a five-point Likert's scale, ranging from 1 (strongly disagree), 2 (disagree), 3 (fair), 4 (agree) to 5 (strongly agree).

For each scale, a sum of weighted item scores was calculated. The calculation formulas were shown in Table 3-1.A median cut-off point for each scale and sub-scale were used to categorize each variable into "high" and "low". The possible scores and cut off points for scales and sub- scales of JCQ were shown in Table 3-2.

Table 3-1 Calculation formulas of Job Content Questionnaire

Scale	Formula
Job control	
- Skill discretion	[Q1+Q3+Q5+Q7+Q9+(6-Q2)]*2
- Decision authority	[Q4+Q8+(6-Q6)]*4
Psychological job demands	3*(Q10+Q11)+2*(Q12+Q13+Q14)
Phsical job demands	Q15+Q16
Job insecurity	Q17+(6-Q18)+(6-Q19)
Workplace social support	
- Supervisor support	Q20+Q21+Q22+Q23
- Coworker support	Q24+Q25+Q26+Q27

Table 3-2 Possible scores and cut-off points of Job Content Questionnaire

Scale (No.of items)	Possible score	High[a]	Low[b]
Job control (9)	24-120	82-120	24-81
- Skill discretion (6)	12-60	44-60	12-43
- Decision authority (3)	12-60	42-60	12-41
Psychological job demands (5)	12-60	30-60	12-29
Physical job demands (2)	2-10	8-10	2-7
Job insecurity (3)	5-15	8-15	5-7
Work place social support (8)	8-40	15-40	8-14
- Suppervisor support (4)	4-20	15-20	4-14
- Coworker support (4)	4-20	15-20	4-14

[a]≥median [b]<median

3.5 Statistic Analysis

Statistics used for data analysis was Statistical Package for the Social Sciences, SPSS. Descriptive statistics such as frequency, percentage, mean and significantly results shown by p value. To determine the job stress (high psychological job demands and low decision latitude) in the workers, decision latitude and psychological job demands scores dichotomized by median cut-off points to obtain high and low values for each scale. According to the Karasek's model (Chapter 2, Figure 2-1), a combination of high psychological job demands and low decision latitude was defined as "high strain", high psychological job demands and high decision latitude was defined as "active", low psychological job demands and high decision latitude was defined as "low strain", low psychological job demands and low decision latitude was defined as "passive".

Pearson's chi-square was used to compare the difference between two proportions, and to obtain prevalence rate ratios, to determine association between genral characteristics, working environment, life style factors and job strain.In the analysis, job strain was grouped into "high job strain" and "non-high job strain". Non-high job strain was three other job strain categories: low strain, active job and passive job.The level of statistical significant was set at $\alpha < 0.05$.

CHAPTER IV
RESULTS

This research studied the level of stress among workers working in polishing process: informal and formal. The results from interveiw by using questionnaire modified from Karasek's Job Content Questionnaire.

The data analysis performed by Statistical Package for the Social Science Programs. The following results were obtained:

4.1 General characteristics of the workers

This study was conducted among 91 workers, 41 workers worked in the informal sector (bronze ware group) and 50 workers worked in the formal sector (toy factory). Their general characteristics were presented in Table 4-1.

Table 4-1 General characteristics of the workers

	Formal (n=50) N(%)	Informal (n=41) N(%)	p-value
Sex			0.821
female	35(70.0)	27(65.9)	
male	15(30.0)	14(34.1)	
Age (years)			0.933
≤ 35	25 (55.1)	20 (47.5)	
>35	23 (48.9)	20 (48.8)	
Education			
Primary school	26(52)	18(43.9)	0.376
Others	24 (48.0)	23 (46.1)	
Income (baht)			0.240
≤5,000	11(22.0)	10(24.4)	
5,001-8,0000	31(62.0)	29(70.7)	
8,001-15,000	8(16.0)	2(4.9)	

Table 4-1 General characteristics of the workers (cont.)

	Formal (n=50) N(%)	Informal (n=41) N(%)	p-value
Marital status			0.345
Married	28(56.0)	4(58.5)	
Others	22 (44.0)	17 (41.5)	
Work experience (years)			0.563
≤ 5	19 (38.0)	20 (50.0)	
6-20	14 (28.0)	8 (20.0)	
21-35	11 (22.0)	6 (15.0)	
> 35	6 (12.0)	6 (15.0)	
Having disease			0.828
Yes	17(34.0)	15(36.6)	
No	33(66.0)	26(63.4)	

According to table 4-1,the characteristics of workers were described below.

Sex: Most of them were female in both informal sector (65.9%) and formal sector (70%). Sex in both groups was not significantly different.

Age: The mean ages in formal and informal group were 38.7 and 37.6, respectively. There was not a significantly different between these age groups. ($p > 0.05$).

Marital status: most of the participants were married; formal (56%) informal (58.5%).Marital status in both groups was not significantly different. ($p > 0.05$).

Education: Most of the participants had graduated at primary school, formal (52%) informal (43.9%) and was not significantly different in both groups. ($p > 0.05$).

Income: The mean of income in the formal and informal group were 6,288(baht) and 6,190(baht). The difference of the mean of income between 2 groups was not significant (p>0.05).

Work experience: The mean of working experience in the formal and informal group were 15.8 years and 14.7 years. The difference of the mean of working experience between 2 groups was not significant (p>0.05).

Health status: most of the subjects were healthy, 34.0% of formal group and 36.6% reported some illness. There was not a significantly different in health status between these two groups. (p> 0.05).

4.2 Lifestyle factors

Table 4-2 reveals that 68.3% of workers in the informal sector and 78% of workers in the formal sector had normal working hours a day(7-8 hrs/day) and 4% of workers in the formal sector worked over 12 hours a day. Most of them sometimes had 3 meals a day (informal 41.5% ,formal 58%).Most workers were non-smokers and non-drinkers both in the informal sector (92.7%,73.2%) and in the formal sector (84%,).Almost of them were not doing exercise (56.% in both in the informal sector and formal sector.

Smoking habit: most of the subjects were none smoker, 84.0% of formal group, 94.4% of informal group. A few subjects former or current smokers. The difference between these groups was not significant (p>0.05).

Drinking habit: 73.2%and 64% of the formal and informal group subjects did not drink alcohol at all and 34.0% and 24.4% (formal/informal) were current drinkers. Only 2.0% and 2.4% (formal/informal) former drank, however the different between these two groups was not significant (p>0.05).

Table 4-2 Lifestyle factors of the workers.

	Formal (n=50) N(%)	Informal (n=41) N(%)	p-value
Working hours (hrs/day)			0.253
≤ 6	5 (10.0)	4 (9.8)	
7-8	39 (78.0)	28 (68.3)	
9-10	3 (6.0)	8 (19.5)	
> 10	3 (6.0)	1 (2.4)	
Taking 3 meals/day			0.291
Always	9 (18.0)	10 (24.4)	
Sometimes	29 (58.0)	17 (41.5)	
Seldom	12 (24.0)	14 (34.1)	
Smoking			0.408
Non-smoker	42(84.0)	38(92.7)	
Ex- smoker	4 (8.0)	1 (2.4)	
Smoker	4 (8.0)	2 (4.9)	
Alcohol drinking			0.61
Non	32 (64.0)	30 (73.2)	
Former	1 (2.0)	1 (2.4)	
Current	17 (34.0)	10 (24.4)	
Exercise			0.23
No	28 (56.0)	23 (56.1)	
≥ 1 time/wk	22 (44.0)	18 (43.9)	

4.3 Working environment

Table 4-3 About 28.0% and 46.3% of the formal and informal group subjects reported that the working environment was good, while the rest reported the workplace environments were needed for improvement such as too warm, too noise, poor ventilation, limited work space, too low level work table, too high chemicals and chaotic working area. There was not a significantly different between these two groups in workplace environment ($p > 0.05$) .The percentage of complaint of chaotic working area were 4.0 and 22.0 (formal and informal group). Chaotic working area and fixed level working chair were significantly difference of between two groups. ($p < 0.05$).

Table 4-3 Working environment of the workers.

Working environment	Formal(n=50) N(%)	Informal(n=41) N(%)	p-value
Good			0.08
Yes	14(28.0)	19 (46.3)	
No	36 (72.0)	22 (53.7)	
Need for improvement [a]			
Too warm	33 (66.0)	24 (58.5)	0.51
Poor ventilation	26 (52.0)	18 (43.9)	0.53
Too noise	16 (32.0)	15 (36.6)	0.66
Too limited working space	15 (30.0)	11 (26.8)	0.82
Fixed level working chair	15 (30.0)	9 (22.0)	<0.05*
Too high chemicals	13 (26.0)	5 (12.2)	0.12
Poor light	5 (10.0)	10 (24.4)	0.08
Too quiet	4 (8.0)	1 (2.4)	0.37
Chaotic	2 (4.0)	9 (22.0)	0.02*
Too low level of working table	1 (2.0)	3 (7.3)	0.32
Others	1 (2.0)	2 (4.9)	0.58

[a] Multiple responses

4.4 Psychosocial job factors

Table 4-4 Comparison of the difference in the mean scores of Job Content Questionnaire in informal and formal sector

Psychosocial Job factors	Formal Mean	Formal SD	Informal Mean	Informal SD	df	p-value
Job control	81.68	9.68	85.70	8.33	88.76	0.036*
Skill discretion	43.28	5.28	44.34	6.19	78.97	0.388
Decision authority	38.40	7.75	41.36	4.15	77.70	0.023*
Psychological Job demands	42.44	5.59	40.63	5.56	85.71	0.128
Physical Job demands	8.22	1.55	5.85	1.04	85.71	<0.001*
Job insecurity	9.88	1.48	9.24	1.42	86.63	0.040*
Workplace social support	27.62	5.32	30.24	3.51	85.42	0.006*
Supervisor support	13.20	3.55	14.24	2.61	88.06	0.110
Coworker support	14.42	2.86	16.00	1.24	69.64	0.001*

Table 4-4. The difference of mean scores of Job Content Questionnaire in the categories of job control, decision authority, physical job demands, job insecurity, workplace social support and coworker support between formal and informal group were significant ($p < 0.05$) and in the categories of skill discretion, psychological job demands and supervisor support between formal and informal group were not significant ($p > 0.05$)

Table 4-5 Psychological job factors (percentage of worker whose score fall in range of high score)

Psychological Job factors	Formal (n=50) N (%)	Informal (n=41) N (%)	p-value
Job control	27(54.0)	30(73.2)	<0.05 *
Skill discretion	28(56.0)	25(61.0)	0.674
Decision authority	19(38.0)	16(39.0)	1.00
Psychological job demands	48(96.0)	40(97.6)	1.00
Physical job demands	36(72.0)	3(7.3)	<0.05 *
Job insecurity	47(94.0)	36(87.8)	<0.05 *
Workplace social support	50(100.0)	41(100.0)	-
Supervisor	19(38.0)	21(51.2)	0.289
Coworker	25(50)	37(90.2)	<0.05 *

Table 4-5. The proportion of high job control of both groups were 73.2% (informal) and 54 % (formal), high psychological job demands (informal 97.6%, formal 96%). About 92.7% of informal workers had low physical job demands. Both groups had high percentage of job insecurity (informal 87.8%, formal 94%). The proportion of high coworker support of informal workers was higher than supervisor support (90.2% vs. 51.2%). The proportion of low supervisor support of formal workers was higher than coworker support (62%vs.50%). Psychological factors such as skill discretion, decision authority, psychological job demands and supervisor support between these groups were not significantly different, at $p > 0.05$ but the rest which were job control, physical job demands, job insecurity and coworker support between these groups were significantly different, at $p < 0.05$.

Table 4-6. Prevalence of stress level

Stress level	Formal (n=50) (N,%)	Informal (n=41) (N,%)	p-value
High strain	21 (42.0)	11 (26.8)	0.147
Low strain	0 (0.0)	1 (2.4)	
Active	27 (54.0)	29 (70.7)	
Passive	2 (4.0)	0 (0.0)	

Table 4-6. Over all, the prevalence of high job strain in the formal group was 42.0%, while active was 54.0% and the prevalence of high job strain in the informal group was 26.8%, while active group was 70.7%

Table 4-7. Percentage of stress level

Stress level	Formal (n=50) N (%)	Informal (n=41) N (%)	Total	p-value
High strain	21(42.05)	11(26.8)	32(35.2)	0.186
Non High strain	29(58.0)	30(73.2)	59(64.8)	

Table 4-7. Revealed 42.05% of high strain was in the formal group, 73.2% of non high strain was in the informal group. Comparing in both groups found that the stress level was not significantly different, at $p > 0.05$

Table 4-8.Personal background of the formal sector associated to stress level

Personal background	High N (%)	Non-high N (%)	p-value
Sex			0.759
Female	14(66.7)	21(72.4)	
male	7(33.3)	8(27.6)	
Age (years)			< 0.001*
≤ 35	2 (9.5)	22 (84.6)	
>35	19 (90.5)	4 (15.4)	
Marital status			0.169
Married	15 (71.4)	13 (44.8)	
Others	6 (28.6)	16 (55.2)	
Education			< 0.001*
Primary school	19 (90.4)	7(24.2)	
Others	2 (9.6)	22 (75.8)	
Income (baht)			< 0.01*
5,001-8,000	8(38.1)	23(79.3)	
Others	13 (61.9)	6 (20.7)	
Work experience (years)			< 0.001*
>20	16(76.2)	1(3.4)	
≤20	5 (23.0)	28 (96.6)	
Own house	19 (90.5)	10(34.5)	< 0.001*
Disease			0.006*
Yes	12(57.1)	5(17.2)	
No	9 (42.9)	24 (82.8)	
Work environment			
- Good	12(57.1)	2(6.9)	< 0.001*

- Too warm	10(47.6)	23(79.3)	0.033*
- Too noisey	0(0)	16(52.2)	< 0.001*
-Poor ventilation	2(9.5)	24(82.8)	< 0.001*
-Limited space	0(0)	15(51.7)	< 0.001*

Table 4-8 presents the characteristics of the formal workers. Most of the personal backgrounds of formal group were significantly associated to stress level, at $p < 0.05$ except sex and marital status were not significantly associated to stress level, at $p > 0.05$

Table 4-9.Personal background of the informal sector associated to stress level

	High N (%)	Non-high N (%)	P value
Sex			0.026
Female	4 (36.4)	23(76.7)	
Male	7(63.6)	7(23.3)	
Age (years)			< 0.001*
≤ 35	2 (18.2)	19 (63.5)	
>35	9 (81.9)	11 (36.6)	
Marital status			0.533
Married	9 (81.8)	23 (76.7)	
Others	2 (18.2)	7 (23.3)	
Education			0.068
Primary school	8(72.7)	10(33.3)	
Others	3 (27.3)	20 (66.7)	
Income			0.098
5,001-8,000	5(45.5)	24(80.0)	
Others	6 (54.6)	6 (20.0)	

Table 4-9.Personal background of the informal sector associated to stress level(cont.)

	High N (%)	Non-high N (%)	p-value
Work experience (years)			0.002*
> 20	8 (72.8)	4 (13.7)	
≤ 20	3 (27.3)	25 (86.2)	
Own house	10 (90.5)	12(40)	0.015*
Disease			0.064
Yes	7(63.6)	8(26.7)	
No	4 (36.4)	22 (73.3)	
Work environment			
- Good	10(90.9)	9(30.0)	0.001*
- Too warm	4(36.4)	20(66.7)	0.151
- Too noisey	0(0.0)	15(50.0)	0.003
-Poor ventilation	2(18.2)	16(53.3)	0.075
-Limited space	0(0)	11(36.7)	0.020*

Table 4-9 presented the characteristics of the informal workers. There were some personal backgrounds of informal group such as age, work experience, residential, good work environment and limited working space were significantly associated to stress level, at $p < 0.05$ except sex , marital status, education, income, too warm work environment ,too noise work environment and poor ventilation were not significantly associated to stress level, at $p > 0.05$.

General characteristics of the formal and informal group include gender, age, marital status, education level, and monthly income, working experience, type of residential and health status. Seven variables of the formal group and five variables of

the informal group under general characteristics were significantly associated with high job strain.(Table 4-10)

Subjects of the formal group who aged > 35years were 10.90 times more likely to develop high job strain than aged ≤35 years (PRR=10.90), subjects of the informal group who aged > 35years were 4.98 times more likely to develop high job strain than aged ≤35 years., male subjects of the informal group were 3.24 times more likely to develop high job strain than female. (PRR=3.24)

Primary school subjects of the formal group were 8.73 times more likely to develop high job strain than those others education level.(PRR=8.73) and for the informal group were 3.62 times more likely to develop high job strain than those others education level.(PRR=3.62)

Subjects who had monthly income less than 5,000 baht were 2.96 times more likely to develop high job strain than those who had monthly income more than 5,000 baht. (PRR=2.96)

Subjects who had working experience >20 years were 6.41 times more likely to develop high job strain than those who had working experience ≤20. (PRR=6.41)

Others two variables (gender and marital status) of formal group and four variables of informal group, ie., marital status, education level, income and living with someone were not statistically associated with high job strain.

Table 4-10 Prevalence rate ratios (PRR) of job stress level (High strain vs. Active) by general characteristics

Variables	Formal (n,%)				Informal (n,%)			
	High	Active	PRR	p-value	High	Active	PRR	p-value
Sex								
Male	7 (46.7)	8 (53.3)	1.10	0.784	7(50.0)	7(50.0)	3.24	0.019*
Female	14(42.4)	19(57.6)			4(15.4)	22(84.6)		
Age (years)								
>35	19(90.5)	2(9.5)	10.90	0.001*	9(47.4)	10(52.6)	4.98	0.007*
≤35	2(8.3)	22(91.7			2(9.5)	19(90.5)		
Marital status								
Married	16(53.3)	14(46.7)	0.79	0.084	9(26.5)	25(73.5)	1.25	0.729
Others	5(27.8)	13(72.2)			2(33.3)	4(66.7)		
Education								
Primary	19(76.0)	6(24.0)	8.73	<0.001*	8(47.1)	9(52.9)	3.62	0.017
Others	2(8.7)	21(91.3)			3(13.0)	20(87.0)		
Income (baht)								
Others	13(76.5)	4(23.5)	2.96	0.001*	6(50.0)	6(50.0)	2.79	0.037
5,001-8,000	8(25.8)	23(74.2)			5(17.9)	23(82.1)		
Work Experience (years)								
>20	16(100.0)	0(0.0)	6.41	<0.001*	8(61.5)	5(38.5)	5.54	0.001*
≤20	5(15.6)	27(84.4)			3(11.1)	24(88.9)		
Living with								
Family	12(63.2)	7(36.8)	2.03	0.028*	6(35.3)	11(64.7)	1.62	0.343
Others	9(31.0)	20(69.0)			5(21.7)	18(78.3)		

Table 4-10 Prevalence rate ratios (PRR) of job stress level (High strain vs. Active) by general characteristics. (cont.)

Variables	Formal (n,%)				Informal (n,%)			
	High	Active	PRR	p-value	High	Active	PRR	p-value
Disease								
yes	12(80.0)	3(20.0	2.96	0.001*	7(6.7)	8(53.3)	1.12	0.035*
No	9(27.3)	24(72.7)			4(6.0)	21(84.0)		
Type of Residential								
Own house	19(70.4)	8(29.6)	7.41	<0.001*	10(45.5)	12(54.5)	8.12	0.005*
Others	2(9.5)	19(90.5)			1(5.6)	17(94.4)		

Table 4-11 Prevalence rate ratios (PRR) of job stress level (High strain vs. Active) by working environment.

Variables	Formal				Informal			
	High	Active	PRR	p-value	High	Active	PRR	p-value
Working Environment								
Good	12(100.0)	0(0.0)	4.00	0.001*	10(52.6)	9(47.4)	10.9	<0.001*
No	9(25.0)	27(75.0)			1(4.8)	20(95.2)		
Too warm								
Yes	10(31.2)	22(68.8)	0.45	0.014*	4(17.4)	19(82.6)	0.42	0.096
No	11(68.8)	5(31.3)			7(41.2)	10(58.8)		
Poor ventilation								
Yes	2(8.0)	23(92.0)	.096	< 0.001*	2(11.1)	16(88.9)	0.027	0.036
No	19(82.6)	4(17.4)			9(40.9)	13(59.1)		

Table 4-11 Prevalence rate ratios (PRR) of job stress level (High strain vs. Active) by working environment.(cont.)

Variables	Formal				Informal			
	High	Active	PRR	p-value	High	Active	PRR	p-value
Too quiet								
Yes	3(100.0)	0(0.0)	2.50	0.043	1(100.0)	0(0.0)	3.90	0.100
No	18(40.0)	27(60.0)			10(25.6)	29(74.4)		
Poor light								
Yes	3(75.0)	1(25.0)	1.83	0.188	5(50.0)	5(50.0)	2.50	0.066
No	18(40.9)	26(59.1)			6(20.0)	24(80.0)		
Fixed level of working chair								
Yes	1(6.7)	14(93.3)	0.11	< 0.001*	0(0.0)	9(100.0)	-	0.336
No	20(60.6)	13(39.4)			11(35.5)	20(64.5)		

Table 4-11 Working environment of the formal and informal group include good, not good, too warm, poor ventilation, too quiet, poor light and fixed level of working chair. Four variables of the formal group under working environment such as good, not good, too warm, poor ventilation and fixed level of working chair were significantly associated with high job strain.($p < 0.05$)

Subjects of the formal group who worked in good environment were 4 times more likely to develop high job strain than those who worked in not good environment.(PRR=4.0)

Subjects of the formal group who worked in too warm environment were 0.45 time more likely to develop high job strain than those who worked in comfortable environment.(PRR=0.45)

Subjects of the formal group who worked in poor ventilation environment were 0.96 time more likely to develop high job strain than those who worked in good ventilation environment (PRR=0.96)

Subjects of the formal group who had to work with fixed level of working chair were 0.11 time more likely to develop high job strain than those who had flexible level of working chair. (PRR=0.11)

Others two variables (too quiet and poor light) of the formal group were not statistically associated with high job strain.($p > 0.05$.)

Good environment of the informal group was significantly associated with high job strain.($p < 0.05$). Subjects of the informal group who worked in good environment were 10.9 times more likely to develop high job strain than those who worked in not good environment.(PRR=10.9)

Others five variables (too warm, poor ventilation, too quiet , poor light and fixed level of working chair.) of the informal group were not statistically associated with high job strain.($p > 0.05$)

Table 4-12 Prevalence rate ratios (PRR) of job stress level (High strain vs. Active) by Lifestyle of the workers

Variables	Formal				Informal			
	High	Active	PRR	p-value	High	Active	PRR	p-value
Working hours.								
> 8	4(80.0)	1(20.0)	2.02	0.084	4(44.4)	5(55.6)	1.96	0.196
≤ 8	17(39.5)	26(60.5)			7(22.6)	24(77.4)		
3meals/day								
Always	14(38.9)	22(61.1)	1.49	0.240	5(19.2)	21(80.8)	2.23	0.11
Sometimes	7(58.3)	5(41.7)			6(42.9)	8(57.1)		
Smoking								
Yes	4(50.0)	4(50.0)	1.17	0.695	1(33.3)	2(66.7)	1.23	0.814
No	17(42.5)	23(57.5)			10(27.0)	27(73.0)		
Alcohol								
Yes	7(38.9)	11(61.1)	1.20	0.599	2(18.2)	9(81.8)	1.70	0.416
No	14(46.7)	16(53.3)			9(31.0)	20(69.0)		

Table 4-12 Prevalence rate ratios (PRR) of job stress level (High strain vs. Active) by Lifestyle of the workers(cont.)

Variables	Formal				Informal			
	High	Active	PRR	p-value	High	Active	PRR	p-value
Exercise (≥1times/wk)								
Yes	9(40.9)	13(59.1)	1.12	0.715	7(38.9)	11(61.1)	0.46	0.145
No	12(46.2)	14(53.8)			4(18.2)	18(81.8)		

Table 4-12 Lifestyles of the workers include working hours, taking three meals/day, exercise, smoking and drinking habits. All of variables were not statistically associated with high job strain. ($p > 0.05$)

CHAPTER V

DISCUSSION

From the study results, there were issues that were discussed to answer the research questions and hypotheses testing as follows:

5.1 Discussion of the study design

This study design was a cross-sectional study**.** The data were collected from questionnaires, which composed of 3 parts as follows:

Part I: General background characteristics.

Part II: Life style factors.

Part III: Job Stress questionnaire modified from Karasek's Job Content Questionnaire.

The study in workers in polishing processes both informal and formal sector was conducted. Workers in the informal sector were workers who worked at one community brownze ware group, Bangkok, whereas in the formal sector were workers at one toy factory in Navanakorn Industrial Estate Zone 3 Pathumtani Province. Data were analyzed for level of stress among workers working in polishing process in the formal and informal sector.

Errors of data collection were minimized as shown in the list below.

5.1.1 Systematic errors

5.1.1.1 Personal error

Using only one interviewer conducted the interviewing; observing and analyzing all of the data will eliminate the error. The method was face-to-face group interview. The interviewer in both groups set the guideline for subjects approach.

5.1.1.2 Method error

This study method was comparative study of job stress among workers between formal and informal sector. Study group had similar working conditions. The data collection were prepared by coordinated with the head of group workers both formal and informal sector. An appointment with workers for group interview questionnaire was set depends on their availability. The duration of data collection took only 15 minutes. It did not disturb the schedule of work. All workers were willing to participate in this study. All workers were explained the content in the questionnaire in all items. The interviewer was at the venue until they finished filling the questionnaire. The interviewer observed their understanding during data collection and informed them that they were free to ask any question.

5.1.1.3 Instrumental error

The original Thai version questionnaire was pretested in 30 factory workers with similar characteristics to the sample group. Wording had been revised again for this study and reviewed by expertise for content validity. The reliability was done in formal and informal workers. Cronbach'Alpha tested all data for reliability. The Alpha coefficient was 0.829.

5.2 Discussion of the study results

This comparative study aimed to investigate the job stress level among workers in the formal and the informal sector. The result was found that job stress level in both groups showed no statistically significant difference. The job strain model that demonstrated the psychological job demand, skill discretion, and decision authority

predicted health and behavior, which was consequence of work structure. This model had 2 dimensions and divided to 4 types of psychosocial in work, which divided by interaction between psychosocial job demand and decision latitude, four types were high strain job, active job, low strain job, and passive job. Therefore, when considered main component in 27 of JCQ, it was found that there were statistically significant in item of physiological jobs demand. It revealed that the physical problem in informal workers might be the cause of job stress in the future. In addition, it was found in this study that, most of workers in both groups never had an exercise. Therefore this reason might involve in the problem of low physiological demand. It was recognized that exercise to solve the physiological problem. There was a study showed the influence of exercise on prevention of heart disease. The adaptation in cardiovascular function with aerobic exercise training increased oxygen delivery to active muscle. BK. Pederson, T. Rohde and K. Ostrowski studied the recovery of the immune system after exercise. They showed that there were several consistent patterns that emerged regarding leucocytes subpopulations in the blood. Netnaphang S. investigated the fatigue of gastrocnemius muscle and the leucocytes count before and after training program in prolongs standing workers. The findings showed that exercise enhanced the muscular activities, increased the number of monocyte and reduced the feeling of fatigue.

Coworker support showed no statistically significant associations in both groups. Informal group had high percentage of coworker support while formal group had lower coworker support. Department of Labor Protection and Welfare, Ministry of Labor and Social Welfare has noted that the informal sector involved with the work with uncertain form, no specific regulation and organization. It was generally believed that stress level in informal should be higher than in formal group. Because of the characteristics of their job but in this study no difference in stress level in both groups was found. However, this statement was not confirmed in these two groups of workers. Coworker might play some roles in “no stress” of informal sector in this study. It was found that there was statistically significant difference in co-worker support in both groups. The reasons might be when they confronted with some problems; they always had their colleagues to help. The well psychosocial condition

exists in this group. In addition most of them stayed in the same area, it was not difficult for them to have regular social activity together, which quite difference from the formal group. The formal group had activity together only once a year. Uchino BN and Garvey TS determined the availability of social support reduce cardiovascular reactivity to acute psychological stress. They suggested that simply having potential access to support was sufficient to foster adaptation to stress in the absence of enacted support. Shimazu A, Shimazu M and Odahara T examined the effects of active coping on job satisfaction in the context of the job demands-control-support model. There data analysis showed that the effect of active coping on job satisfaction depended on the extent of coworkers' support, not on job control and supervisors' support. This study would confirm that co-worker support influence much on the level of stress in two groups of workers.

Decision authority showed statistically significant associations in both groups. It could be explained that their works task classified as typical operator job working or not high skill operating task. Their own supervisors made most of job decision. It should be improved because it might cause in low productivity and health effect as reviewed by the study of job decision latitude, job demand, and cardiovascular disease: a prospective study of Swedish men by Karasek R., et al. They found that low decision latitude was associated with increased risk of cardiovascular disease. The study of stress, mental health and job performance among active duty military personal by Hourani LL,Williams TV, and Kress AM.also reported that Personnel with high levels of stress had significantly higher rates of productivity loss than those with less stress. Santavirta N, Solovieva S and Theorell T studied the association between job strain and emotional exhaustion in a cohort of 1,028 Finnish teachers. They found that the main effect of high demands exceeded that of low decision authority in relation to emotional exhaustion.

Although the informal sector workers worked with no certain working system, the status as not equal to the workers in the formal sectors. Work and get paid were not under the protection of the social security bill, no minimum wage rate depending on the amount and quality of work. They seemed lack of working security but the result

of insecurity job was nearly as high as the formal workers were. The reason might explain that their supervisors had very good relationship with workers, his personality in high leadership and vision. He was the key person helping in starting their job including provided an equipment for works, knowledge dissemination and job assignment community.

In the general background characteristics and lifestyle factors. It found that in both groups had the interesting parameter such as sex, age, marital status, working experience, education level, having disease, working environment, working hour, meal, smoking, alcohol consumption and exercise.

The level of job stress was related with age and experience of work in both groups. The age group older than 35 had a higher stress than the younger. This might explained that the older workers normally had high workload and more responsibility. As mention in the study of Nedic O, Jocic N, Filipovic D and Solak Z.they found that a sense of responsibility in health personal as a cause of work-related stress. Physiological status of older workers was in appropriated to do more work. Therefore in order to achieve production target they need to have high effort for this requirement. Then they would have high stress.

Income and having children were related to the level of job stress only in formal sector. It might explained that low income workers had more chance to develop higher stress than high income workers because of the high cost of living and responsibility for any expense. When they could not control their expense the stress would exist. The number of children affected those stress level only in the formal sector rather in the informal sector because the age range of the workers in the formal sector were lower than those in the informal workers. And the responsibility for raising their younger children who were differenced from the informal workers status that most of their kids had their own job.

It was found that education level was related to the level of job stress only in the formal sector. Also can explain that the education level in the formal sector played important role in improving the career path and job promotion. Even though they were

good at work but they had lower education they would lack of opportunity to be promoted for higher position such as becoming line-supervisor. But these systems were not found in the informal sector. Therefore the education level was not related to the level of job stress in the informal sector.

Having diseases: The level of job stress was related with having disease status only in the formal sector. It can explain that there were systems of annual health check up for workers in the formal sector as comply to the notification issue by the ministry of labor. Those made the formal workers recognize themselves about their health status. But in the informal workers did not have that system for health checkup. They could not recognize themselves until they got sick.

The level of job stress was related with working environment in both groups. Especially about limited working space and too noisy. In general work characteristic in both sector had very noisy and limited working space. Working in that atmosphere can cause body fatigue and high stress. It is agreed with the study of Jovanovic J and Jovanovic M on occupational stress and arterial hypertension. They aimed to analize working conditions, working environment, work demands and identification of occupational stressor and their influence on development of arterial hypertension. They found that occupational stressors are significant factor in development of arterial hypertension of exposed workers. The most important stressors are noise, carbon monoxide and job dissatisfaction. In addition it found that too hot working environment was related to the level of job stress only in the formal sector. It might explain that their workplace is the closed system, which is difference from the informal sector. Most of workers in the informal sector worked at home opened system and no fix schedule of working.

The formal workers had high exposure to chemical and poor ventilation that was related to the level of high stress It might explained that because of the working environment was closed system and workers feeling of poor ventilation. The chemicals might be accumulated as well as the temperature might be increased in this workplace.

In the part of lifestyle survey, there was no parameter related to stress level. Investigated parameters include working hours, number of meal, smoking, alcohol consumption and exercise. Most of the workers in both did not perform exercise.

Hagihara A, Tarumi K, and Nobutomo K. reported that work stress did relate to alcohol consumption. But this finding is different from this study because most of their subjects are male workers, while most of subjects in this crossectional study were female workers which were non-alcohol drinker.

CHAPTER VI
CONCLUSION

The aims of this cross-sectional study were to assess the stress level among informal and formal workers in bronze ware group and Toy factory according to job demand control model which developed by Robert Karasek. The assessments were using the Thai version of Karasek‘s Job Content Questionnaires.

Stress level of the informal workers was less than the formal workers, but job stress level in both group showed no statistically significant difference.

Age and experience of work were significant related to the level of job stress in both formal and informal sector whereas not only income and having children were significant related to the level of job stress but also education level and having diseases were found only in the formal sector.

Working environment was significant related to the level of job stress in both group, such as limited working space and too noise environment of working, whereas feeling high exposure to chemical and poor ventilation were significant related to the level of job stress only in the formal sector.

Therefore, when considered main component in 27 of JCQ, it was found that there were statistically significant in item of physiological jobs demand. Coworker support and decision authority

For the lifestyle, there was no parameter related to stress level. Most of the workers in both did not perform exercise.

6.1 Recommendation

Based on the finding of this study, the following issues should be considered in decreased any problems that leading to job stress.

6.1.1. Both sector should have their management plan in improving working environment especially concerning on limited working space, too noise, feeling high exposure to chemical and poor ventilation.

6.1.2. Further study should be encouraged in all workers in the formal sector because the education level is very important .It can be use as the criteria for job promotion such as line-supervisor.

6.1.3. Recreation activities and physical exercise should also provide in order to keep workers healthy.

6.1.4. Workplace health promotion and health surveillance should implement in order to keep workers health record up to date and inform everyone to be aware of sign and symptom of the disease related job stress.

6.1.5. Workplace should have more social activity between workers together, workers and supervisors in order to promote good relationship. Both supervisor and coworker support can reduce job stress.

6.2 Recommendations for further study

6.2.1. Further study should be conducted to find based data of job stress and health in the whole informal system in Thailand.

6.2.2. Further study should be carried out with more sample size, and should have intervention reducing stress level in both groups.

6.2.3. Perspective study in job stress related to health should be conducted to find out the workers health data in order to initiate program activities for health promotion and occupational diseases and injuries prevention.

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APPENDIX

APPENDIX

แบบสอบถามเลขที่.....

แบบสอบถาม

เรื่อง ความเครียดจากการทำงานของคนงานขัดชิ้นงาน

คำชี้แจง

แบบสอบถามชุดนี้ มี**วัตถุประสงค์เพื่อ** ศึกษาปัจจัยที่มีผลต่อความเครียดที่เกิดจากการทำงาน ได้แก่สิ่งแวดล้อมทางจิตสังคม บรรยากาศการทำงาน และวิถีชีวิต ที่มีผลให้เกิดความเครียดจากการทำงาน ทั้งนี้หากปัจจัยเหล่านี้ได้รับการแก้ไข จะช่วยลดความเครียดจากการทำงาน ตลอดจนลดความเสี่ยงต่อการเกิดโรคที่เป็นผลมาจากความเครียดเช่น โรคหัวใจ โรคความดันโลหิตสูง

ขอให้ท่านตอบคำถามแต่ละข้อตามความเป็นจริง ทุกคำถามไม่มีคำตอบข้อใดที่ถูกหรือผิด

การตอบแบบสอบถามชุดนี้ไม่ต้องระบุชื่อของผู้ตอบ ท่านจึงแน่ใจได้ว่าจะไม่มีการเชื่อมโยงผลการศึกษาที่ก่อให้เกิดผลกระทบที่ไม่ดีต่อตัวท่าน **ข้อมูลที่ได้จะถูกวิเคราะห์ในภาพรวมและนำไปใช้เพื่อการวิจัยเท่านั้น**

ขอขอบคุณทุกท่านที่ให้ความร่วมมือในการตอบแบบสอบถามครั้งนี้

พ.ต.หญิง สุรัสวดี ถนัดศีลธรรม

แบบสอบถามประกอบด้วยข้อมูลทั้งหมด 3 ส่วน คือ

ส่วนที่ 1 ข้อมูลทั่วไป

ส่วนที่ 2 วิถีชีวิต

ส่วนที่ 3 บรรยากาศในการทำงาน

<u>ส่วนที่ 1</u> ข้อมูลทั่วไป

1. เพศ [ ]1 ชาย [ ]2 หญิง

2. อายุ ..... ปี

3. วุฒิการศึกษา

[ ]1 ประถมศึกษา [ ]2 มัธยมต้น [ ]3 มัธยมปลาย

[ ]4 ปวช. [ ]5 ปวส. [ ]6 ปริญญาตรี

4. สถานภาพสมรส

[ ]1 โสด [ ]2 คู่

[ ]3 หย่า/แยก [ ]4 หม้าย(คู่เสียชีวิต)

5. ท่านมีบุตรหรือไม่

[ ]1 ไม่มี [ ]2 มี ..... คน(ต้องรับผิดชอบด้านการเงินหรือเลี้ยงดู ..... คน)

6. ท่านทำงานที่นี่มาแล้ว ..... ปี

7. ปัจจุบันท่านทำงานหน้าที่ .....

8. ท่านมีรายได้ต่อเดือนทั้งสิ้นเฉลี่ย ..... บาท

9. ขณะนี้ท่านอาศัยอยู่ที่

[ ]1 บ้านของตนเองหรือครอบครัว [ ]2 บ้านเช่า(เช่าเอง)

[ ]3 อื่นๆ ระบุ .....

10. ขณะนี้ท่านพักอยู่กับ

[ ]1 อยู่คนเดียว [ ]2 คู่ครอง [ ]3 ครอบครัว/ญาติ [ ]4 เพื่อน

11. ท่านมีโรคประจำตัวหรือไม่ (ตอบได้มากกว่า ๑ ข้อ)

[ ]1 ไม่มี

[ ]2 โรคความดันโลหิตสูง [ ]3 โรคหัวใจ

[ ]4 โรคเบาหวาน [ ]5 โรคมะเร็ง

[ ]6 โรคตับ [ ]7 โรคไต

[ ]8 ไขมันในเลือดสูง [ ]9 โรคเกาต์

[ ]10 โรคอื่นๆ ระบุ .....

12. สภาพสิ่งแวดล้อมในการทำงานตามการรับรู้ของท่านเป็นอย่างไร (ตอบได้มากกว่า ๑ ข้อ)

[ ] 1 สภาพสิ่งแวดล้อมในการทำงานดี

[ ] 2 ร้อนมากเกินไป [ ] 3 หนาวมากเกินไป

[ ] 4 เสียงดังมาก [ ] 5 เงียบมากเกินไป

[ ] 6 การระบายอากาศไม่ค่อยดี [ ] 7 มีการสั่นสะเทือนมาก

[ ] 8 แสงน้อยเกินไป [ ] 9 พื้นที่ในการทำงานแคบจนรู้สึกอึดอัด

[ ] 10 โต๊ะทำงานต่ำเกินไป [ ] 11 เก้าอี้นั่งปรับระดับไม่ได้

[ ] 12 มีปริมาณสารเคมีมากเกินไป [ ] 13 มีคนเดินพลุกพล่านเกินไป

[ ] 14 อื่นๆ ระบุ .....

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<u>ส่วนที่ 2</u> วิถีชีวิต

1. ในช่วง 3 เดือนที่ผ่านมา ท่านทำงานเฉลี่ยวันละกี่ชั่วโมง โดยไม่รวมเวลาพัก

[ ] 1 น้อยกว่า 6 ชั่วโมง [ ] 2 7-8 ชั่วโมง

[ ] 3 9-10 ชั่วโมง [ ] 4 11-12 ชั่วโมง

[ ] 5 มากกว่า 12 ชั่วโมง

2. ในช่วง 3 เดือนที่ผ่านมา ท่านได้รับประทานอาหารครบ 3 มื้อสม่ำเสมอหรือไม่

[ ] 1 ไม่ครบ 3 มื้อเป็นประจำ [ ] 2 ครบ 3 มื้อเป็นบางวัน

[ ] 3 ครบ 3 มื้อทุกวัน

3. ปัจจุบันท่านสูบบุหรี่หรือไม่

[ ] 1 ไม่เคยสูบเลย [ ] 2 เลิกสูบแล้ว(นานประมาณ ..... วัน ..... เดือน ..... ปี)

[ ] 3 สูบ วันละประมาณ ..... มวน (..... ซอง)

4. ปัจจุบันท่านดื่ม สุรา เบียร์ หรือ เครื่องดื่มอื่นๆที่มีแอลกอฮอล์ หรือไม่

[ ]1 ไม่เคยดื่มเลย [ ]2 เลิกดื่มแล้ว(นานประมาณ ..... วัน ..... เดือน ..... ปี)

[ ]3 ดื่ม สัปดาห์ละ ..... วัน

5. ในช่วง 1 เดือนที่ผ่านมา ท่านออกกำลังกายสัปดาห์ละกี่ครั้ง (นับรวมเฉพาะครั้งที่ระยะเวลาไม่น้อยกว่า 30 นาที/ครั้ง)

[ ]1 ไม่เคยออกกำลังเลย

[ ]2 1 ครั้งต่อสัปดาห์

[ ]3 2 ครั้งต่อสัปดาห์

[ ]4 3 ครั้ง หรือ มากกว่า 3 ครั้ง ต่อสัปดาห์

<u>ส่วนที่ 3.</u>บรรยากาศในการทำงาน

ทำเครื่องหมาย ✓ ลงในช่องว่าง ตามความคิดเห็นที่ท่านเห็นว่าเหมาะสมที่สุดเพียงข้อเดียว

บรรยากาศในการทำงานที่ท่านทำทุกวันนี้ ท่านมีความเห็นว่า

ข้อความ	ไม่เห็นด้วยอย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วยอย่างยิ่ง
1.ท่านจำเป็นต้องเรียนรู้สิ่งใหม่ๆในการทำงาน					
2.งานที่ท่านทำเป็นงานที่ซ้ำซาก จำเจ น่าเบื่อ					
3.งานที่ท่านทำต้องการความคิดริเริ่มสร้างสรรค์					
4.งานที่ท่านทำท่านสามารถตัดสินใจได้ด้วยตนเอง					
5.งานที่ท่านทำต้องการความชำนาญสูง					
6.ท่านมีอิสระในการตัดสินใจเกี่ยวกับงานน้อย					
7.งานที่ท่านทำมีความหลากหลายในการปฏิบัติ					
8.ท่านสามารถวิจารณ์เกี่ยวกับงานที่ท่านทำได้					
9.ท่านมีโอกาสที่จะพัฒนาความสามารถของตนเอง					
10.ท่านทำงานได้รวดเร็ว					
11.ท่านรู้สึกว่าทำงานหนัก					
12.งานที่ทำมีปริมาณมาก					
13.ท่านมีเวลาเพียงพอในการทำงานตามที่ได้รับมอบหมายในแต่ละวัน					

ข้อความ	ไม่เห็นด้วย อย่างยิ่ง	ไม่ เห็นด้วย	ไม่ แน่ใจ	เห็นด้วย	เห็นด้วย อย่างยิ่ง
14.ท่านไม่มีความขัดแย้งกับผู้ร่วมงาน					
15.งานที่ท่านทำต้องการความกระฉับกระเฉง ว่องไว					
16.จุดที่ท่านทำงานอยู่ทำให้ร่างกายของท่านเมื่อยล้า					
17.งานที่ท่านทำเป็นลักษณะงานประจำ					
18.หน้าที่การงานที่ท่านทำมีความมั่นคง					
19.ท่านอาจให้ถูกออกจากงานในอนาคต					
20.หัวหน้ากลุ่มของท่านให้ความห่วงใยต่อสวัสดิการของคนงานในกลุ่ม					
21.หัวหน้ากลุ่มของท่านให้ความสนใจต่อสิ่งที่ท่านเสนอ					
22.หัวหน้ากลุ่มของท่านให้ความช่วยเหลือต่อการปฏิบัติ งานของท่านเป็นอย่างดี					
23.หัวหน้ากลุ่มของท่านเป็นผู้นำที่ดีและทำให้พวกท่านทำงานร่วมกันเป็นอย่างดี					
24.เพื่อนร่วมงานที่ท่านทำเป็นผู้ที่มีความสามารถและรอบรู้ในงาน					
25.เพื่อนร่วมงานสนใจในสิ่งที่ท่านพูด					
26.เพื่อนร่วมงานส่วนใหญ่เป็นมิตรกับท่าน					
27.เพื่อนร่วมงานช่วยเหลือท่านเป็นอย่างดี					

BIOGRAPHY

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