

**YANGON UNIVERSITY OF ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME**

**A STUDY ON SOCIO-ECONOMIC STATUS OF PCCD
WORKERS IN YANGON**

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WORKERS IN YANGON**

A thesis submitted in partial fulfillment of the requirements for the
Master of Public Administration (MPA) Degree

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ABSTRACT

In this thesis, an effort has been made to assess the socio-economic status of PCCD workers. The purpose of this study is to find out how municipal authority provides labor safety, health safety and environment in Yangon. Method of study is descriptive method based on both primary data and secondary data. Primary data is collected by face to face interview with structured questionnaires on (250) workers. The survey was done by using purposive random sampling method. Scope of this study is mainly four townships out of ten townships from West district Yangon. This study shows that most of them were primary school level 89 (35.6%) and second highest level was middle school 79 (31.6%). Lower level of respondents was university level 6 (2.4%). All respondents earned 4800 kyats on daily basis. This study also shows that average household income was insufficient to cover living cost of their household. The survey was found that most of workers live in servant's quarters. Some are not satisfied because quarter is small to live. Water supply generally expressed positive emotions. All of workers are satisfied for electricity. 20% of respondents suffer from skin disease. 6.8% of the respondents suffered other disease such as (dengue fever, broken hands and legs). The organization has the leave benefit according to labor law. It was found that workers are satisfied job stability that they need to worry job for next day.

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LIST OF ABBREVIATIONS

| | |
|------|---|
| MSW | Municipal Solid Waste |
| MSWM | Municipal Solid Waste Management |
| PCCD | Pollution Control and Cleaning Department |
| SES | Socioeconomics Status |
| WA | Work Admit |
| YCDC | Yangon City Development Committee |

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

Yangon has a population of about 7.4 million with an annual growth rate of about 2.3 percent. (World Population Review, 2019) With development and urbanization, various forms of waste discharge arising from human activities have increased, ranging from sewerage, garbage, night solid, industrial and hazardous waste. The pollution Control and Cleansing Department (PCCD), under the Yangon City Development Committee (YCDC), is the responsible government department for solid waste management in Yangon and the responsibilities comprise of collection, storage, transportation, disposal of solid waste and collection of service fees. The status of waste management in the city is inadequate fitted to cause with the present demand due to several reasons such as obsolete equipment, lack of planning, legislation, guidelines, capacity building, public awareness on environment, and budget allocation.

The PCCD is putting effort to solve the problem of solid waste by all means but it also has problem of lack of human resource available especially the daily needed cleaners where there are only about 3800 worker available to cleanse all over Yangon. Waste collection workers are exposed to several occupation stressors which may affect their quality of life. Role of municipal services are important for community development and city sanitation. If workers face injuries or accident, supervisor aid to them. Municipal workers are facing health hazard. Workers involved in face occupational health and safety hazards which are as diverse as the materials they are handling. Worker have not empowerment or self-determination on their work. They work by command of supervisor.

Workers are not satisfied for work hours because they are working midnight to dawn. Workers are lack of awareness because they do not use filly coverable accessories especially gloves and masks. Workers visit each individual house to collect garbage. Most are on daily wages and they are working here with the hope that

they will become permanent workers. This department has been providing other benefit apart from their wages so that they would be engaged in this work as workers of this type of work are hard to recruit for this department.

Municipal solid waste is an outcome of economic productivity and consumption and includes wastes from households, commercial establishments, institutions, markets, and industries and its handling and disposal is a growing environmental and public-health concern. Population growth and economic development have brought increasing amounts of solid waste to urban areas. Solid waste management encompasses a wide range of activities including, Collecting garbage; collection, sorting recyclable materials; collection and processing of commercial and industrial waste. Risks occur at every step in the process, from the point of collection at homes, during transportation and at the sites of recycling or disposal. Workers are exposed to occupational health and accident risks related to the content of the materials workers handled, emissions from those materials, and the equipments being used. In areas, infectious medical wastes and toxic industrial wastes are not segregated from domestic waste, the waste collectors are exposed to a wide array of risks. As a result of their exposure to multiple risk-factors workers suffer high rates of occupational health-problems. Most diseases (Water borne, air born, Contact) have exposure pathways and most injuries have contact pathways (hepatitis B virus [HBV], human immunodeficiency virus [HIV], Tetanus). Making waste technologies more contained, reducing contaminant emissions, changing working methods to interrupt the pathways and using of protective clothing can reduce risks.

The waste discharged for collection is seldom stored in closed containers and is dumped on the ground directly, requiring that it be shoveled by hand, or left in an open carton or basket to be picked up by hand. Workers have significantly more direct contact with solid waste than their counterparts in high-income countries, who predominantly handle sealed plastic bags and covered dustbins. The exposure to the health-risks was not yet identified as a special occupational problem. In most high-income countries data on health and accident consequences is inadequate, and in developing countries almost non-existent. There has been little study of the health and injury incidence of solid waste workers. Workers suffer from limitations related to poor exposure assessment, and lack of information on relevant confounders. Waste work is overridden by the social, economic, and environmental deprivations and also involves gender issues. The working conditions for women sweepers are often very

poor, sweepers may have no protective wears or equipments but few complain about the situation.

The aim of the study was to assess (1) Prevalence of health problem and (2) standard of living (3) problem of work places (4) workers face injuries or accidents (5) their education. That is why studied must be made Socio-economic status of PCCD workers.

1.2 Objective of the Study

The objectives of the study are to examine the socio-economic status of PCCD workers and to describe how municipal authorities provide labor safety, health safety and environment in Yangon.

1.3 Method of Study

Method of study is descriptive method based on both primary data and secondary data. Secondary data obtained from Yangon City Development Committee, literature books, internet websites and research reports. Primary data are collected by surveying PCCD workers with a sample of at least 250 workers in Yangon (West District). The survey was done by using purposive random sampling method.

1.4 Scope and Limitations of the Study

This study mainly focuses on the WA workers in west district of Yangon. The data collection period of time is on February 2019. Scope of this study is mainly four townships out of ten townships from West district of Yangon. The study is limited to the workers of PCCD under YCDC.

1.5 Organization of the Study

This paper is organized into five chapters. Chapter one is concerned with the introduction. In the introduction, the rational of the study, objective of the study, method of study, scope and limitation of the study and organization of the study are mentioned. In chapter two, including with socioeconomic Status of the waste collectors, characteristic of PCCD worker in developing countries, health work environments, solid waste management system in developing countries and review on previous studies. Chapter three presents overview of PCCD worker in Yangon. The overview of PCCD worker in Yangon is concerned with Yangon City Development

Committee (YCDC), Duties and Responsibility of PCCD Workers, Functions of the Pollution Control and Cleansing Department (PCCD) and The Role of Supervisor in Township Level. In chapter, the survey analysis is with the survey profile, survey design and survey finding. Finally, Chapter five consists of findings and recommendations.

CHAPTER II

LITERATURE REVIEW

2.1 Socioeconomic Status of the Waste Collectors

Socioeconomic status (SES) is an economic and sociological combined total measure of a person's work experience and of an individual's or family's economic and social position in relation to others, based on household income, earners' education, and occupation are examined, as well as combined income, whereas for an individual's SES only their own attributes are assessed. However, SES is more commonly used to depict an economic difference in society as a whole. (Goode, Erica. 1999)

Socioeconomic status is typically broken into three levels (high, middle, and low) to describe the three places a family or an individual may fall into. When placing a family or individual into one of these categories, any or all of the three variables (income, education, and occupation) can be assessed.

Additionally, low income and education have been shown to be strong predictors of a range of physical and mental health problems, including respiratory viruses, arthritis, coronary disease, and schizophrenia. These problems may be due to environmental conditions in their workplace, or, in the case of disabilities or mental illnesses, may be the entire cause of that person's social predicament to begin with. (Marmot, Michael. 2004)

Waste collection is a necessary activity all around the world. Fortunately for the health and living conditions of inhabitants, there are professional waste collectors. For waste collectors, however, the risk of disease resulting from exposure to various work hazards is high, (Wouters IM, Hilhorst SKM, Kleppe P. 2002) as is the risk of fatal and non-fatal occupational accidents. (Kuijjer PPFM, Frings-Dresen MHW, 2004)

Waste collection can be practiced as either an occupation or an essential means of survival. (Da Silva MC, Fassa AG, Siqueira CE, 2005) The socioeconomic status of both types of waste collectors is low, and their working conditions are unfavorable. In the occupational setting, however, many preventative measures have

been proposed and implemented in order to reduce the risk of accidents and occupational disease. Such measures involve increasing safety and reducing the risk of musculoskeletal, fatigue, respiratory, gastrointestinal, and hearing complaints. The effectiveness of most of these measures, however, has yet to be investigated. (Kuijer PPFM, 2002)

The risk of disease increases with the intensity and duration of exposure to occupational hazards, as well as with the age of the worker. For this reason, the Netherlands adopted an age dependent guideline for waste collection in 1998. The guideline specifies three methods of waste collection (bags, two-wheeled containers, and four-wheeled containers). It also prescribes a maximum amount of waste (or a maximum number of bags/containers) and a maximum number of hours that waste collecting tasks may be performed during an eight hour working day. (Frings-Dresen MHW, Kemper HCG, Stassen ARA.1995) In addition to the introduction of this guideline, new collection methods (for example, underground storage systems and automatic collection systems that use trucks with mechanical arms to pick up containers) have been incorporated into the working situation. New techniques will obviously not always lead to the reduction of disease; they may sometimes even bring new risks. For this reason, the occupational health services of most European countries use specific periodic health surveillance to monitor the specific work related diseases of workers.

When waste collection is an essential way of living or means of survival, as is the situation for the Brazilian rag pickers, measures to reduce the risk of disease are difficult to realize. Without regulation or occupational control. Their living conditions are also very poor, thus further increasing the risk of disease. Combined with high unemployment, ecologically oriented (international) governmental agreements and recycling regulations stimulate the collection and sale of waste by people with little education and poor living conditions. Adults and children alike must often “work” under such conditions. Working at a young age can have a long negative impact on health, and it may result in lifelong exposure to hazards. (Kassouf AL, McKee M, Mossialos E.2001) Prevention begins by providing information to the target group and official authorities about these risks and hazards. Publication in scientific journals is a good first step in the effort to convince official authorities and the world about the living conditions of this subpopulation.

The most important tasks are to convince the target group that they are at risk for illness and to distribute protective and safety materials. Another, perhaps more effective, manner is to educate children and young adults about the hazards of working under these conditions and the risks of short term and long term health complaints. In cooperation with the ILO (International Labor Organization) and ICOH (International Commission on Occupational Health), the WHO (World Health Organization) has already decided to focus more latent health in adulthood. (Jensen RT.2001) Education (more specifically, education concerning occupational safety and health) and the implementation of knowledge among the target groups is an essential factor in changing the working behaviour of these vulnerable groups.

2.2 Characteristics of PCCD Worker in Developing Countries

PCCD worker is someone who works for the municipal government. In most countries, city or town governments have overall responsibility for waste management operations – ensuring that collection takes place and that the collected materials are delivered to processors, market, or disposal facilities. Financing for vehicles, crews, and other equipment usually is provided by the municipal government, which is ultimately responsible for the entire process.

In developing countries, Municipal solid waste management has waste management has many obstacles that include the undisciplined households who dispose wastes in their convenience, not separating waste mix, and the waste pickers leaving the waste dumps in array making it difficult to the municipal crews or workers to move them to the final disposal sites. Most of people who are engaged in the disposal of wastes include waste pickers, municipal sanctioned waste collectors, and scavenger. The responsibility is on the municipality to clean up the city and it needs to have an adequate amount of crews to complete this function. However, in developing countries, there is always lack of human resource and sometimes there shortage of this type of workers. The nature of this work needs human labor as cleaning up various types of mixed thrash, garbage. Municipalities have to recruit these workers by providing them the necessities and benefits for their welfare. The extent of provision of these benefits may vary but at least these would encourage them to join the workforce.

Workers would decide to work if the total compensation includes the wage and extra benefits normally known as fringe benefits. Total compensation comprises

wage earnings and the costs of fringe benefits. Fringe benefits include public (legally mandated) programs such as social security, unemployment compensation, and worker's compensation. They also include many private non-mandatory programs such as private pensions, medical and dental insurance, paid vacations, and sick leave. Fringe benefits can increase the utility that workers receive from a given amount of total compensation. Fringe benefits also can benefit the firm by permitting it to retain and attract high-quality workers.

The composition of total compensation also differs by occupational group. Workers are normally categorized into two types which are the white collar workers (educated and engaged in office works) and the blue collar workers mostly called manual laborers (doing hard works). (McConnell/Brue/Macpherson, 2007) For example, because of legally mandated fringe benefits, the fringe benefit share of total compensation is greater for blue-collar workers than for white-collar workers. For example, legally required benefits are a significantly higher percentage of total pay for transportation workers than for executives.

The observed morbidity like respiratory diseases, eye diseases, dermatological problems nail infections. The work related health problems were reported to be high. The prevalence of respiratory, dermatological, eye problems and injury, musculoskeletal problems were reported to be high among municipal solid work handler. Measures are needed to improve the work environment of waste handlers by ensuring availability protective gears base on ergonomic principles, clean drinking water and washing and sanitation facilities during working hours. (Jayajrushan Thayil, Bhaskar Rao. 2013)

2.3 Healthy Work Environment

Health work environments are understood that a healthy work environment not only benefits employees through improved health and wellness but also benefits customers, shareholders and communities. It take a comprehensive approach to promoting health and wellness.

Healthy work environments encourage workers to take responsibility for their own health, safety and wellness and contribute to creating a healthy work environment; create environments that make the healthy choice the easy choice; provide information and resources to assist their workers to make healthy lifestyle choices and to achieve and maintain good health; promote work-life balance and

make work a healthy life experience; create a healthy physical, social and psychological work environment as a core business goal.

Taking a comprehensive approach to workplace health is an effective way to create healthy work environments. The basic idea is “healthy people in healthy and safe workplaces.” A healthy work environment has organizational cultures systems, and management practices that support employee health and wellness goals.

Workers will be better able to achieve optimal health when they work in a healthy environment that they have played an active role in creating and sustaining. The process of creating healthy and safe workplaces is itself healthy. (Graham S. 2004)

2.3.1 Criteria of Healthy Working Environment

Employee creates healthy outcomes for its people – improved health and well-being, and for the organization—reduce costs and improved performance. These healthy working environments are-

1. The business values its employees
2. Safety comes first
3. Jobs are challenging
4. Employees have control over work load and work place
5. Employees have a say in workplace decisions
6. Relationships are based on trust, respect, and fairness
7. Employees have adequate resources to do their job
8. Supervisors support employees
9. Employees have opportunities for training and development
10. Communication is two-way and open
11. Employees are recognized for their contributions
12. Pay and benefits provide an adequate and secure living standard

2.3.2 Flexible Workplace

A flexible workplace supports employees to balance work and life commitments. It's an environment in which the workplace culture views this balance as positive and encourages employees to take advantage of options such as:

- **Flexibility**- allowing employees to have some capacity to adapt their workday to respond to family issues such as a child becoming ill or one who has special needs, school visits and parent-teacher interviews or special needs of elders. It typically includes family responsibility leave for employees.
- **Supportive**- supervisors/manager whose management style values staff and is characterized by a desire to help employees achieve better balance between work and the rest of their lives.
- A culture that is **family friendly**- overall attitudes, beliefs, values and taken-for-granted ways of doing things that support work-family issues as legitimate workplace concerns, and as an opportunity to develop 'new ways of working'. Options include maternity, paternity, family and personal leave provisions.
- **Alternative work arrangements**- options are available to employees including daily or schedules flex time arrangement, job-sharing, reduced hours, compressed work week, family leave options, part-time work, gradual retirement, telecommuting, other leaves and sabbatical options. Such alternative work arrangements are seen as ways of working, and employees using them are not sidelined, marginalized or belittled.
- Recognition of **child and elder care** issues including support for child care, providing access to a services regarding child or elder care, establishing on-site child care or, developing a consortium with other employers in order to provide emergency child care. This includes accommodating the needs of employees who are breastfeeding their children.

2.4 Solid Waste Management System in Developing Countries

Solid waste management may be defined as the discipline associated with the control of generation, temporary storage, collection, transfer and transport, processing, and disposal of solid wastes in a manner that is in accord with the best principles of public health, economics, engineering. Conservation, and other environmental considerations, and that is also responsive to public attitudes.

Integrated solid waste management (SWM) in developing countries has traditionally focused on organizational and technical concerns. The many activities and actors that waste management comprises. A new paradigm of SWM is needed which must extend the technical model to tackle a range of problems associated with waste management in order to achieve socially and environmentally responsible waste management.

Waste management developing countries is a challenge; both behavior of citizens and the poor management of waste contribute to the issues of waste. Software model was run for various technologies. The primary purposes of solid waste management (SWM) strategies are to address the health, environmental, aesthetic, land-use, resource, and economic concerns associated with the improper disposal of waste.

Although many sophisticated models are available, but are of little use to developing countries since it does not take into account typical developing countries, municipal solid waste characteristics such as high organic content, poor performance of formal sector, high activity of scavengers and waste pickers etc. So, there is a need to have a fresh look at parameters involved in the municipal solid waste (MSW) management and developing a model from the third world's perspective. Strategic planning as a tool for accomplishing long-term objective has been utilized on the level of both organizational and on the level of countries or cities. Governments should employ this to achieve a sustainable waste management process in cities and countries.

In regards of municipal solid waste management (MSWM), it is a process which needs the participation of citizens as the first generator of waste who can facilitate much by supporting and contributing to the strategy of waste management that formulated by government. All developing countries, the majority focused on technical solution which are very important for sure, little have focused on the role of active participation and coordination of all stakeholders through all phases of waste management especially participation of citizens which is not less importance.

In addition to technical arrangements of waste management (storage, collection and disposal), the public participation should be considered. Government will need to develop the long-term vision, communicate it to the public, and coordinate with different stakeholders to increase the awareness to make people recognize the importance and the value will be gained behind an effective waste management process. Citizens also should realize the significance of their role and

understand well that it is critical for the success of the waste management in the country.

It is a combination between the effort done by government through providing the legislation and the facilities, and on the same level of importance, the contribution of the citizens by demonstrating the appropriate behaviors and actions regarding the country to accomplish the aimed goal of a cleaner country.

A participatory strategic planning process for waste management might be needed to effectively obtain the commitment of all stakeholders toward this challenging process from waste generation till waste disposal. (Tamer M. Ismail, 2015)

MSW collection is an important aspect in maintaining public health in cities around the world. The amount MSW collected varies widely by region and come level; collection within cities can also differ greatly. Collection rates range from a low of 41% in low-income countries to a high of 98% in high income countries. Waste collection is the collection of solid waste from point of production (residential, industrial commercial, institutional) to the point of treatment or disposal.

Municipal solid wastes are collected in several ways:

1. House-to-House: Waste collectors visit each individual house to collect garbage. The user generally pays a fee for this service.
2. Community Bins: Users bring their garbage to community bins that are placed at fixed points in a neighborhood or locality. MSW is picked up by the municipality, or it's designate, according to a set schedule.
3. Curbside Pick-Up: Users leave their garbage directly outside their homes according to a garbage pick-up schedule set with the local authorities (secondary house-to house collectors not typical).
4. Self-Delivered: Generators deliver the waste directly to disposal sites or transfer stations, or hire third-party operators (or the municipality).
5. Contracted or Delegated Service: Businesses hire firms (or municipality with municipal facilities) who arrange collection schedules and charges with customers. Municipalities often license private operators and may designate collection areas to encourage collection efficiencies.

Depending on local regulations, collected MSW can be separated or mixed. Often especially in developing countries, MSW is not separated or sorted before it is taken for disposal, however, recyclables are removed by waste pickers prior to collection during the collection process, and at disposal sites. In some cities, informal

waste pickers have strong links to the waste program and can prevent municipally sanctioned crews from accessing the waste as informal waste pickers process the waste.

Capacity cities of Least Developed Asian Countries are challenged by urbanization and industrialization trends, population increase and consequent rise in waste.(Glawe, Ulrich.2012) Poor government policy and response, lack of political will, lack of appropriate economic and human resources, and weak local institutions result in poor waste management (especially in large cities). These cities therefore face major problems relating to public health and environmental pollution.

Integrated solid waste management (SWM) in developing countries have traditionally focused on organizational and technical concerns. This approach neglects the many activities and actors that waste management comprises. A new paradigm of SWM is needed which must extend the technical model to tackle range of problems associated with waste management in order to achieve socially and environmentally responsible waste management.

All developing countries is a challenge, both behavior of citizens and the poor management of east contribute to the issues of waste. Software model was run for various technologies. The primary purposes of solid waste management (SWM) strategies are to address the health, environmental, aesthetic, land-use, resource, and economic concerns associated with the improper disposal of waste.

“Municipal solid waste” (MSW) is a term usually applied to a heterogeneous collection of wastes produced in urban areas, the nature of which varies from region to region. The characteristics and quality of the solid waste generated in a region is not only a function of the living standard and lifestyle of the region’s inhabitants, but also of the abundance and type of the region’s natural resources. Urban wastes can be subdivided into two major components; organic and inorganic.

In general, the organic components of urban solid waste can be classified into three broad categories: putrescible, fermentable, and non-fermentable. Putrescible waste tend to be decompose rapidly and unless carefully controlled, decompose with the production of objectionable odors and visual unpleasantness. Fermentable waste tends to be decompose rapidly, but without the unpleasant accompaniments of putrefaction. Non-fermentable waste tends to be resist decomposition and, therefore, break down very slowly. A major source of putrescible waste is food preparation and consumption. As such, its nature varies with lifestyle, standard of living and seasonality of foods. Fermentable wastes are typified by crop and market debris.

The primary difference wastes generated in developing nations and those generated in industrialized countries is the higher organic content characteristics of the former. Wastes generated in countries located in humid, tropical, and semitropical areas usually are characterized by a high concentration of plant debris; whereas those generated in areas subjects to seasonal changes in temperature or those in which coal or wood are used for cooking and heating may contain an abundance of ash. The concentration of ash may be substantially higher during winter. Regardless of climatic differences, the wastes usually are more or less contaminated with night soil. These differences prevail even in wastes generated in large metropolitan areas of a developing country.

Ideally, solid waste should not contain fecal matter or urine, and the mixing of these materials with households waste should be prohibited by law. However, enforcement difficulties, combined with variations in way of life, necessitate some tolerance in this matter. Solid waste collection in a manner satisfactory with respect to environmental health is made difficult when human excretory wastes are mixed with household wastes. Nevertheless, it is important to keep in mind that despite all precautions, some pathogens and chemical residues inevitably will be present in the waste.

2.4.1 Concepts of Hazardous Waste

Hazardous wastes are wastes with properties that make them dangerous or potentially harmful to human health or the environment. Hazardous wastes can be liquids, solids, contained gases or sludge.

Hazardous waste is waste that has substantial or potential threats to public health or the environment. Characteristic hazardous wastes are materials that are known or tested to exhibit one or more of the following hazardous traits:

- Ignitability
- Reactivity
- Corrosively
- Toxicity

Hazardous wastes may be found in different physical states such as gaseous, liquids or solids. A hazardous waste is a special types of waste because it cannot be disposed of by common means like other by products of our everyday lives. Depending on the physical state of the waste, treatment and solidification processes might be required.

(a) Worldwide

Worldwide, the United Nations Environmental Programme (UNEP) estimated that more than 400 million tons of hazardous wastes are produced universally each year, mostly by industrialized countries. About 1 percent of this is shipped across international boundaries, with the majority of the transfers occurring between countries in the Organization for the Economic Cooperation and Development (OECD). One of the reasons for industrialized countries to ship the hazardous waste to industrializing countries for disposal is the rising cost of disposing of hazardous waste in the home country.

(b) Household Hazardous Waste

Household Hazardous Waste (HHW), also referred to as domestic hazardous waste or home generated special materials, is a waste that is generated from residential households. HHW only applies to waste coming from the use of materials that are labeled for and solid for “home use”. Waste generated by a company or at an industrial setting is not HHW.

The following list includes categories often applied to HHW. It is important to note that many of these categories overlap and that many household wastes can fall into multiple categories:

- Paints and solvents
- Automotive wastes (used motor oil, antifreeze, etc.)
- Pesticides (insecticides, herbicides, fungicides, etc.)
- Electronics (computers, televisions, cell phones)
- Aerosols/Propane cylinders
- Caustics/Cleaning agents
- Refrigerant –containing appliances
- Some specialty batteries
- Ammunition
- Radioactive wastes

2.4.2 Environmental and Health Impact

The organic fraction of MSW is an important component, not only because it constitutes a sizable fraction of the solid waste stream in a developing country, but

also because of its potentially adverse impact upon public health and environmental quality. A major adverse impact is its attraction of rodents and vector insects for which it provides food and shelter. Impact on environmental quality takes the form of foul odors and unsightliness. These impacts are not confined merely to the disposal site. On the contrary, they pervade the area surrounding the site and wherever the wastes are generated, spread, or accumulated.

Unless an organic waste is appropriately managed, its adverse impact will continue until it has fully decomposed or otherwise stabilized. Uncontrolled or poorly managed intermediate decomposition products can contaminate air, water, and soil resources.

2.5 Reviews on Previous Studies

Toe Aung (2008) studies that solid waste management in Yangon City. Solid waste management system is essential to raise public awareness and public sector participation, implement the container collection system for marginal areas, improve the existing final disposal sites and select new sites, improve scavenger participation and implementation of waste reusing and reducing method.

Roy Je (2015) studies that solid waste management system and working environment of PCCD workers in Yangon. 330 employees from PCCD, they are all Work Admit (WA) workers and are on a daily wage basis. It is found that out of 330 employees, all respondents earned 3000 kyats on daily basis. It can be see that most of workers prefer sweeping and collecting than collect on vehicle because sweeping and collecting can earn extra income from recyclable materials. And then, most of workers prefer to work night shift than day shift. Most of sweeping and collecting workers prefer stable work place. Workers are satisfied to their foreman. Workers are satisfied job stability that they need's to worry job for next day. Most of workers are lack of awareness.

CHAPTER III

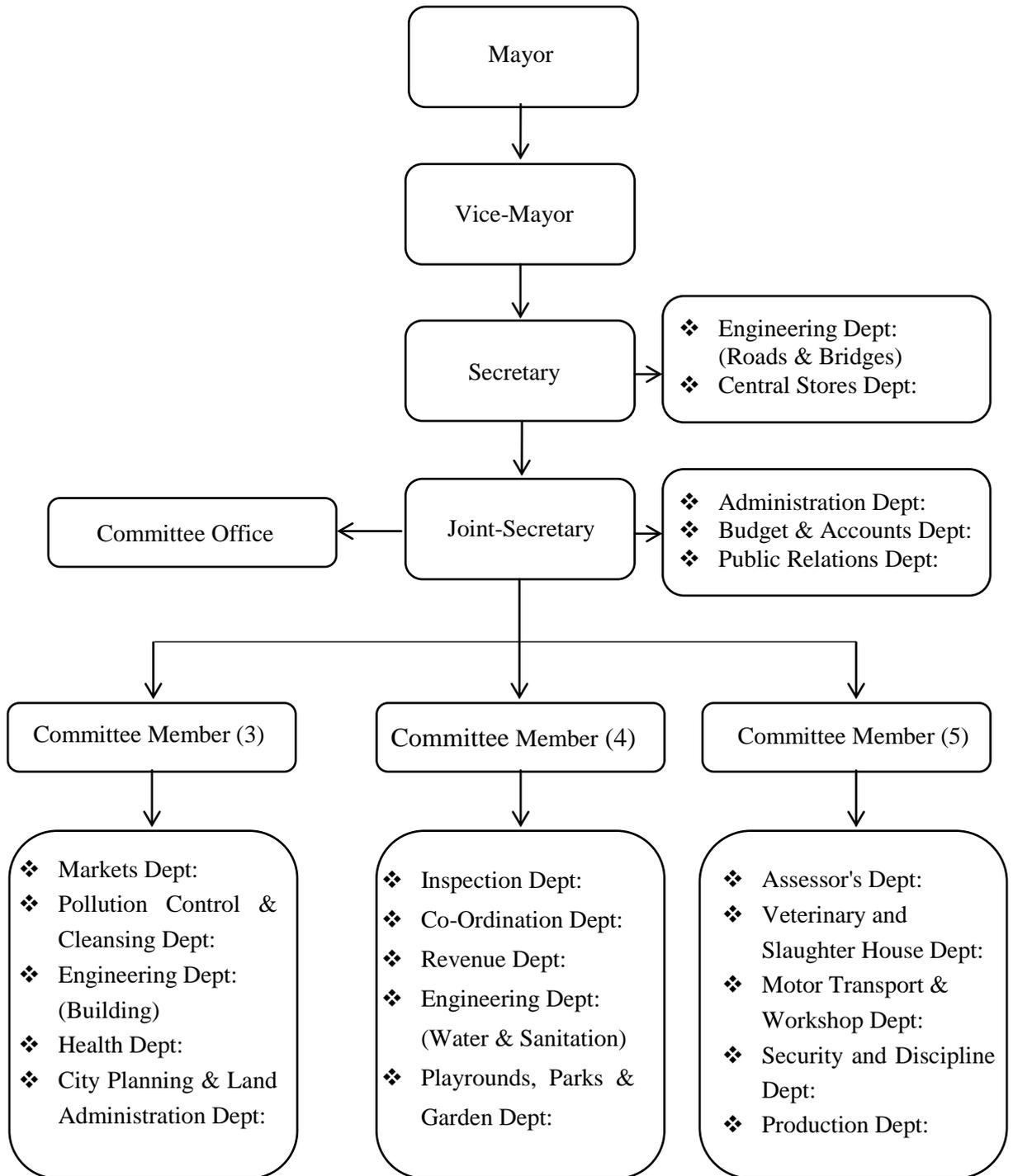
OVERVIEW OF PCCD WORKERS IN YANGON

3.1 Yangon City Development Committee (YCDC)

In Yangon, Yangon City Development Committee (YCDC) plays an important role in managing urban growth and the required services for the populace of Yangon. YCDC provides different services for the general public welfare and other social activities. YCDC has formulated city development plans and performed well to improve Yangon City, economically, socially and environmentally.

At present, YCDC was structured with (20) Heads of Departments and (33) Executive Township Officers in YCDC areas. The committee members managed these twenty Heads of Departments and the appointed Executive Township Officers. The Committee is doing its best to maintain Yangon City's image of a garden city, with 3800 work forces of its Cleansing and Pollution Control Department. Major Department of the YCDC are as following Figure (3.1).

Figure (3.1) The Organization Structure of YCDC



Source: YCDC (Committee Office), 2018

3.2 Duties and Responsibility of PCCD Workers

The Pollution Control and Cleansing Department (PCCD) is organized with a workforce of 4955 employees. This department has a large number of employees, as it needs many manual workers to clean up the city. Of the 4955 employees, 38 are officers, 789 are staff, permanent staff is 80, 248 are on daily wages, and the largest group is the WA workers amounting to 3800.

The duties and Responsibility of the Pollution Control and Cleansing Department (PCCD) are:

- i. Sweep, collect and transport the waste from road and streets in the townships that have to pay tax accuracy of waste within the boundary area of Yangon City Development Committee
- ii. Plan and manage suitable waste collection systems for disposing waste in taxed townships and wards.
- iii. Designate disposal places, construct brick tanks and keep waste bins in order to carry out the designated collection systems regularly.
- iv. Guide to clean the waste in non-tax accuracy of government buildings, compound sand campus tax and to discard the waste in designated places.
- v. Manage to dispose the collected waste at final disposal site.
- vi. Open the advanced public toilets with charges.
- vii. Supervise the enterprises which can make department's income.
- viii. Designate cemeteries for burial and cremation.
- ix. Supervise necessary preventive ways for water pollution, air pollution and solid pollution and noise pollution in order to prevent environmental pollution.
- x. Submit to buy necessary equipment, garbage trucks and international standard dust bins, to maintain, use and record them systematically.
- xi. Take action for irresponsible dumping according to laws, by-laws and directive.
- xii. Give public information and awareness to obey the system of discarding the waste separately such as dry waste and wet waste.

1. Collection Systems and Time

The brick tank system: the waste can be discarded from evening (6-11) pm to morning (6-10) am. The dumping site system: which are kept in townships at set time, the discard at Euro Standard Size dust bins and also at brick tanks. The bell ringing

system: the waste collect with bell ringing truck and cart on the designated date and time after negotiation with ward supervisors. The dispose waste in green and blue bags are designated by committee and tie safely waste bags. And then discard waste bags with the above 3 systems. Here it must be noted that the waste must be kitchen waste.

2. Separated of Waste Disposed System

Wet waste such as kitchen waste, left-over, flowers can be discarded safely tight with blue bags daily. Dry waste such as paper, cork, plastic, broken toys, pieces of metal, pieces of wire can be discarded safely tight with green bags weekly (Wednesday and Sunday).

3. Classification of Waste

The kitchen waste means all useless materials throw away from houses, apartments and kitchens except garden waste. The garden waste means all waste from pruning/cutting trees, grass, bushes within compound and broken parts of house and furniture. The factory waste means all useless materials thrown away from factories. The construction waste means all useless materials thrown away from construction sites. The commercial waste means all useless materials thrown away from commercial business factories. The general waste means all useless materials such as kitchen waste and other waste except green waste, factory waste, construction waste and commercial waste. The disguising waste means dead bodies of animals, excrement, and smelling muck from animals, blood, smelling liquid or dirt. The hospital waste means all useless materials thrown away from State owned hospitals, organizations owned hospitals, private owned hospitals and clinics within the city area.

4. Final Disposal Sites Management

There are four final disposal sites in Yangon. Final disposal sites in Yangon City are Htawe Chaung, Htein Bin, Dala and Seikkyi Khanaungto.

Table (3.1) Final Disposal Sites

| No | Final Disposal Site | Location Townships | Area | Disposal Tons Per Day |
|----|---------------------|--------------------|--------|-----------------------|
| 1 | Htawe Chaung | North Dagon | 147.22 | 1070.5 |
| 2 | Htein Bin | Hlaing Thar Yar | 150 | 1287.75 |
| 3 | Dala | Dala | 1.30 | 21.76 |
| 4 | Seikkyi Khanaungto | Seikkyi Khanaungto | 0.25 | 7.11 |

Source: YCDC (2018)

Table (3.1) shows the Htawe Chaung Final Disposal Site in North Dagon Township and Htein Bin Final Disposal Site in Hlaing Thar Yar Township. Total area of Htawe Chaung Final Disposal Site is (147.22) acre Used area (95) acre. Total area of Htein Bin Final Disposal Site is (150) acre Used area (100) acre. Total area of Dala Disposal Site is (21.76) acre. Total area of Seikkyi Khanaungto Disposal Site is (0.25) acre. Current disposal sites are 1287.75 tons per day at Htein Bin FDS, 1070.5 tons per day at Htawe Chaung FDS, 21.76 tons per day at Dala FDS and 7.11 tons per day at Seikkyi Khanaungto FDS.

If a person who does not use the collection system of the committee or on call system discards the waste at designated final disposal sites with his own plan, shall pay the designated charge (5000) kyats for the 1st ton and (2000) kyats for additional one ton.

5. Cemeteries Management

There are classified into 7 cemeteries in order to perform funeral. These cemeteries are Yeway, Htein Bin, Kyi Su, Kyu Khaung, Dala, Seikkyi Kha Naung and Seikkyi. Yeway Cemetery can arrange funeral services for 16 townships. Htein Bin Cemetery can arrange funeral service for 13 townships. Kyi Su Cemetery can arrange for 5 townships. Kyu Khaung, Dala, Seikkyi Kha Naung To and Seikkyi Cemeteries can arrange funeral service for 1 township. If the townships designated to cremate in Htein Bin cemetery wanted to keep dead body in mortuaries in Yeway

cemetery in order to cremate, there must be paid(100000) kyats as a charge. When wanting to cremate the dead body directly in non- designated cemetery, there was no need to pay the charge. No one can take out the dead body that has been kept in mortuaries of cemetery to outside without permission of the department.

When a funeral occurs, the cemeteries give service to carry the dead body during 24 hours. The people can contact with the cemeteries by phone or in person. The cemeteries can also arrange to keep the dead body in mortuaries according to the desire of people. The cemeteries can arrange funeral services for the whole procedure. No one carry without burial certificate. The documents are necessary if the people wants the skeleton outside.

3.3 Functions of the Pollution Control and Cleansing Department (PCCD)

The Pollution Control and Cleansing Department (PCCD), one of the twenty departments under YCDC, administers and performs the solid waste management system under the guideline of YCDC. Yangon City is divided into 4 administrative regions or districts and 33 administrative sub-regions, namely 33 townships respectively. PCCD sets up its divisional office for each district and 32 township officers to carry out cleaning services in those areas.

3.3.1 Cleansing Service

Cleansing services of the department are as follows: Cleansing services of the department, kinds of waste to be discarded, Cleaning and Collection of tax and revenue according to townships, On Call (Separated waste charge), Collection of tax for commercial waste and Pollution Control Awareness from Pollution Control of department.

1. Cleansing Services of the Department

The waste from roads and streets in the townships that have to pay tax accuracy of waste within the boundary area of Yangon City Development Committee are collected and transported. Suitable waste collection systems for disposing waste in taxed townships and wards are planned and managed. Disposal places, construct brick tanks and keep waste bins in order to carry out the designated collection systems are designate. The waste in non-tax accuracy of government buildings, compounds and campus tax and to discard the waste in designated places are Guided to clean. The

collected waste at final disposal site are managed to dispose. The advanced public toilets with charges are opened. Cemeteries are kept for burial and cremation. Necessary preventive ways for water pollution, air pollution and soil pollution and noise pollution in order to prevent environmental pollution are supervised. Action for irresponsible dumping is taken according to laws, by-laws and directive.

Pollution Control Cleansing Departments are located in the following districts. The number of WA workers in the following districts:

Table (3.2) Number of WA Workers in 4 Districts

| No | Districts | Number | | | | |
|----|----------------|-------------|-------------|-------------|-------------|-------------|
| | | 2013 | 2014 | 2015 | 2016 | 2017 |
| 1 | East District | 818 | 787 | 798 | 788 | 773 |
| 2 | West District | 1153 | 1129 | 1129 | 1118 | 1098 |
| 3 | South District | 1000 | 954 | 954 | 951 | 931 |
| 4 | North District | 874 | 911 | 912 | 905 | 927 |
| | Total | 3845 | 3781 | 3793 | 3762 | 3729 |

Source: YCDC

Table (3.2) shows for East District, the number of workers in 2017 are more decreased than workers in 2013. For West District, the numbers of workers in 2017 are more decreased than workers in 2013. For South District, the numbers of workers in 2017 are more decreased than workers in 2013. For North District, the numbers of workers in 2017 are more increased than workers in 2013. The data show that totally workers are decrease in 2017.

2. Cleaning and Collection of Tax and Revenue According to Townships

Quarter by years Fee of Waste Collection is collected in 32 townships in the boundary of Yangon City Development Committee. The townships are divided into three groups: CBD, Sub-Urban and Satellite. Currently, waste collection fee is collected by on-line receipt since October 2014.

Table (3.3) Waste Collection Fees

| No. | Area | Collection Service Fee per Quarter by Month(kyats) |
|-----|---------------------------|---|
| | | 2018 |
| 1 | Central Business District | 1800 |
| 2 | Suburban area | 1350 |
| 3 | Satellite area | 900 |

Source: YCDC (2018)

Table (3.3) shows the current waste collection systems and time: kinds of waste for discarding

- (i) Collection fee is 20 kyat per day in CBD (15) townships and collect (1800) Kyat per quarter by month
- (ii) Collection fee is 15 kyat per day in Sub-Urban (10) township and collect (1350) Kyat per quarter by month
- (iii) Collection fee is 10 kyat per day in Satellite (7) townships and collect (900) Kyat per quarter by month

This collection of tax is not door-to-door system and it only collects for kitchen waste which is disposed at the designated collection systems.

3. On Call (Separated waste charge)

Apart from the Kitchen waste, construction waste, factory and plant waste, garden, park, yard waste and other no cleansing tax can be dumped by renting the following vehicles in the fixed rate and disposal.

Table (3.4) Separated Waste Charge

| No. | Type of Vehicle | Rate (MMK) |
|-----|---|------------|
| 1 | Small Vehicle Ahar Man Thit/GBS | 35000 |
| 2 | Median size vehicle (5)ton (Cheng Long) | 70000 |
| 3 | Large Vehicle (7.5) ton (10-wheel Dump Truck Power Plush) | 105000 |

Source: YCDC (2018)

Notice - (1) Trash Vehicle rents including lubricant.

Notice - (2) No service with sanitation workers.

YCDC fixed trash wheel costing rate is 2500 MMK one time.

7. Collection of Tax for Commercial Waste

The enterprises such as Hotel, Motel, Inn, Guesthouse, hospitals and clinic and in the area of Yangon City Development Committee are collected for tax based on the kind and size of the enterprises as follows the table (3.4).

Table (3.5) Collection of Tax for Commercial Waste

| No. | Types of Activities | Charge of Waste Collection (in Kyats) |
|-----|--------------------------------|--|
| 1 | Commercial | 500-600000 |
| 2 | Guest House, Inn, Motel, Hotel | 4000-400000 |
| 3 | Hospital | 1500-600000 |
| 4 | Poly and special clinics | 1500-200000 |

Source: YCDC (2018)

Table (3.5) shows the charges based on types of activities, the kind of sizes, facilities, waste types and others. According to this table, collection fees is minimum of 500 kyats to maximum of 600000 kyats for business, minimum 4000 kyats to maximum 400000 kyats for guest houses, inns, hotel and motels, minimum 1500 kyats to maximum 600000 kyats for hospitals and minimum 1500 kyats to maximum 200000 kyats for poly and special clinics.

8. Pollution Control Awareness from Pollution Control of Department

Pollution Control of department are final disposal site management, cemeteries management and awareness activities for local communities and school. Currently, PCCD-YCDC is conducting School and Public awareness programs related with SWM, discussion for awareness programs by distributing flyers and pamphlets, making questions and answers, waste sorting games & competition for Integrated Solid Waste Management.

3.4 The Role of Supervisor in Township Level

Supervisors of township level under PCCD are critical role for solid waste management in Yangon. 33 supervisors of township level manage W/A worker such as sweeping and collecting, collect on vehicle, divide to day shift worker and night shift worker, etc.

All townships' supervisor manage all work place with cleaned position next morning, also known as "Linn Pyaung" system. So they divide duty more worker night shift than day shift. Some supervisor of township level set up duty sweeping and collecting workers more than collecting on vehicle and some set up collecting on vehicle worker more than sweeping and collecting workers. It is depend on how to set up brick tank, bins etc. if township has more brick tank or temporary disposal solid point, and supervisor set up duty more collecting on vehicle workers.

If workers face injuries or accidents, supervisor aid to them. There have no specially fund for this matters. Supervisors issue to workers such as gloves, uniform, boots, mask and other implemented accessories.

PCCD regularly check up to workers' health, one per month and immunize Hepaticas, Tuberculosis and awareness to workers about diarrhea, crime, civil services' rule and regulation.

Table (3.6) W/A Workers, Vehicle, Bins, Brick Tank Lists of 7 Township

| No. | District | W/A | | | Collecting Vehicle | Bins | | | Collecting cart | Brick tank |
|-----|-----------------------|------------|------------|-------------|--------------------|-------------|------------|-------------|-----------------|------------|
| | | Day | Night | Total | | 660 | 240 | Total | | |
| | East (Office) | 25 | - | 25 | 4 | | | | | |
| 1 | Thingangyun | 45 | 85 | 130 | 8 | 234 | 91 | 325 | 69 | 8 |
| 2 | S- Okkalapa | 40 | 60 | 100 | 10 | 213 | 109 | 322 | 62 | 14 |
| 3 | N- Okkalapa | 75 | 81 | 156 | 11 | 322 | 107 | 429 | 58 | 40 |
| 4 | S- Dagon | 50 | 70 | 120 | 7 | 228 | 56 | 284 | 50 | 17 |
| 5 | N- Dagon | 35 | 71 | 106 | 7 | 274 | 64 | 338 | 43 | 35 |
| 6 | E- Dagon | 40 | 22 | 62 | 3 | 119 | 72 | 191 | 35 | 20 |
| 7 | Dagon-Seikkan | 50 | 24 | 74 | 3 | 90 | 24 | 114 | 22 | 18 |
| | Total | 360 | 413 | 773 | 53 | 1480 | 523 | 2003 | 339 | 152 |
| | West (Office) | 57 | - | 57 | 9 | | | | | |
| 1 | Kyauktada | 40 | 79 | 119 | 3 | 161 | 13 | 174 | 60 | |
| 2 | Kyimyindaing | 40 | 70 | 110 | 8 | 156 | 79 | 235 | 54 | 6 |
| 3 | Sanchaung | 45 | 75 | 120 | 5 | 116 | 15 | 131 | 29 | 5 |
| 4 | Dagon | 41 | 70 | 111 | 3 | 68 | 84 | 152 | 38 | 4 |
| 5 | Panbetann | 45 | 66 | 111 | 3 | 78 | 5 | 83 | 54 | 2 |
| 6 | Bahann | 70 | 82 | 152 | 7 | 216 | 101 | 317 | 70 | 6 |
| 7 | Latha | 25 | 79 | 104 | 3 | 118 | 6 | 124 | 49 | - |
| 8 | Lammadaw | 30 | 74 | 104 | 5 | 120 | 73 | 193 | 56 | 4 |
| 9 | Ahlonge | 40 | 70 | 110 | 6 | 121 | 44 | 165 | 65 | 2 |
| | Total | 433 | 665 | 1098 | 52 | 1154 | 420 | 1574 | 475 | 29 |
| | South (Office) | 28 | - | 28 | 5 | | | | | |
| 1 | Seik- To | 20 | - | 20 | 1 | 34 | 16 | 50 | 20 | |
| 2 | Tamwe | 58 | 99 | 157 | 8 | 290 | 132 | 422 | 125 | |
| 3 | Dala | 71 | - | 71 | 4 | 84 | 19 | 103 | 17 | 46 |
| 4 | Dawpone | 35 | 40 | 75 | 4 | 135 | 63 | 198 | 23 | 17 |
| 5 | Pazuntaung | 40 | 63 | 103 | 6 | 109 | 89 | 198 | 72 | 2 |
| 6 | Bothtaung | 35 | 67 | 102 | 5 | 180 | 64 | 244 | 60 | |
| 7 | Taungnyung | 88 | 50 | 138 | 7 | 309 | 261 | 570 | 72 | 11 |
| 8 | Yankin | 45 | 70 | 115 | 6 | 225 | 192 | 417 | 67 | 8 |
| 9 | Thakaeta | 78 | 44 | 122 | 7 | 273 | 107 | 380 | 48 | 28 |
| | Total | 498 | 433 | 931 | 53 | 1639 | 943 | 2582 | 504 | 112 |
| | North (Office) | 21 | - | 21 | | | | | | |
| 1 | Shwe Pyi Tha | 80 | 42 | 122 | 9 | 204 | 45 | 249 | 56 | 52 |
| 2 | Hlaing Thaya | 75 | 40 | 115 | 11 | 123 | 29 | 152 | 47 | 54 |
| 3 | Insein | 87 | 58 | 145 | 9 | 322 | 77 | 399 | 56 | 35 |
| 4 | Mayangone | 80 | 72 | 152 | 11 | 355 | 223 | 578 | 88 | 30 |
| 5 | Haling | 50 | 70 | 120 | 9 | 229 | 54 | 283 | 54 | 20 |
| 6 | Kamayut | 42 | 70 | 112 | 8 | 130 | 120 | 250 | 63 | 9 |
| 7 | Mingaladon | 70 | 30 | 100 | 9 | 142 | 165 | 307 | 42 | 20 |
| 8 | Total | 505 | 382 | 887 | 66 | 1505 | 713 | 2218 | 406 | 220 |

Source: YCDC (Yangon City Development Committee)

According to table (3.7), East district includes 7 townships such as Thingangyun, S-Okkalapa, N-Okkalapa, S-Dagon, N-Dagon, E-Dagon and Dagon-Seikkan. Total number of workers are 773 people in east district. Number of day workers are 360 people and number of night workers are 431 people. Above the table, Number of night workers greater than number of day workers in east district. In east district total collecting vehicles are 53 vehicles and total collecting carts are 339 carts. Total number of bins are 2003 bins in east district. Number of 660 bins are 1480 and number of 240 bins are 523 bins. Total number of brick tanks are 152 tanks.

West district includes 9 township such as Kyauktada, Kyimyindaing, Sanchaung, Dagon, Panbetann, Bahann, Latha, Lammadaw and Ahlone. Total number of workers are 1098 people in west district. Number of day workers are 433 people and number of night workers are 665 people. Above the table, Number of night workers greater than number of day workers in west district. In west district total collecting vehicles are 52 vehicles and total collecting carts are 475 carts. Total number of bins are 1574 bins in west district. Number of 660 bins are 1154 and number of 240 bins are 420 bins. Total number of brick tanks are 29 tanks.

South district includes 9 township such as Seik-To, Tamwe, Dala, Dawpone, Pazuntaung, Botahtaung, Taungnyung, Yankin and Thakaeta. Total number of workers are 931 people in west district. Number of day workers are 498 people and number of night workers are 433 people. Above the table, Number of day workers greater than number of night workers in west district. In south district total collecting vehicles are 53 vehicles and total collecting carts are 504 carts. Total number of bins are 2582 bins in south district. Number of 660 bins are 1639 and number of 240 bins are 943 bins. Total number of brick tanks are 112 tanks.

North district includes 7 townships such as Shwe Pyi Tha, Hlaing Thaya, Insein, Mayangone, Haling, Kamayut and Mingaladon. Total number of workers are 887 people in west district. Numbers of day workers are 505 people and number of night workers are 382 people. Above the table, Number of night workers greater than number of day workers in north district. In north district total collecting vehicles are 66 vehicles and total collecting carts are 406 carts. Total numbers of bins are 2218 bins in north district. Number of 660 bins are 1505 and number of 240 bins are 713 bins. Total numbers of brick tanks are 220 tanks.

CHAPTER IV

SURVEY ANALYSIS

4.1 Survey Profile

Yangon is the economic city of Myanmar and served as the capital until 2006. The population was 7,360,703 according to 2014 census. It is located in southern Myanmar; Yangon region is bordered by Ayeyarwaddy region to the west and by Bago region to the north and east. It is flanked by the Gulf of Martaban (Andaman Sea) to the south. There were large number of Bamar, as well as Chinese Burmese, Burmese Indians, Chin, Rakhine, Mon, Karen, Shan, Kayah and Kachin ethnic groups and a small amount. The majority of people are Buddhism. Yangon is Myanmar's largest city and its most important commercial center. Yangon city is divided in to 4 Districts and comprised with 45 Townships. The study was selected from Yangon, Kyauktada, Latha, Lammadaw, and Panbetann townships as sample for the data collection. These four townships are located in west district of Yangon, Myanmar. A brief background of the four townships is given below.

1. Kyauktada Township

Kyauktada Township is the center of downtown Yangon, Myanmar. The township consists of nine wards, and shares borders with Botataung Township in the east, Seikkan Township and Yangon River in the south, Pabedan Township in the west and Mingala Taungnyunt Township in the north. The township is home to many historic buildings, including the Sule Pagoda, the City Hall, the High Court Building, the Strand Hotel as well as embassies of the UK and India. Three of the tallest buildings in Yangon, the Traders Hotel (now Sule Shangri-La), the Sakura Tower, and the Center Point Tower are located in Kyauktada. Many government offices are headquartered here. Maha Bandula Park across from Sule Pagoda and the city hall is a major recreational area in the downtown area. The township has five primary schools, one middle school and one high school. Many of its school children attend high schools in nearby townships of Botataung and Pabedan.

2. Latha Township

Latha Township is located in the western part of downtown Yangon, and shares borders with Lanmadaw township in the west, Pabedan township in the east, Seikkan township and Yangon river in the south, and Dagon township in the north. It consists of ten wards and is home to three primary schools, one middle school and two high schools. Lanmadaw and Latha Townships make up the Yangon Chinatown.

3. Lanmadaw Township

Lanmadaw Township is located in the western part of downtown Yangon, and shares borders with Ahlon Township in the west, Latha Township in the east, Seikkan Township and Yangon River in the south, and Dagon Township in the north. It consists of twelve wards and is home to five primary schools, two middle schools and two high schools. Lanmadaw and Latha townships make up the Yangon Chinatown. Lanmadaw Township is home to Yangon Institute of Nursing and University of Medicine 1, Yangon.

4. Pabedan Township

Pabedan Township is located in the center of downtown Yangon, Myanmar. The township is home to Bogyoke Aung San Market and Theingyi Market, two of the largest shopping centers in all of Yangon. The township consists of eleven wards, and shares borders with Kyauktada township in the east, Seikkan township and Yangon river in the south, Latha township in the west and Dagon township in the north. The township has three primary schools, two middle schools and three high schools. And The Famous school is BEHS 2 Pabedan.

4.2 Survey Design

The survey is designed to obtain information on the socio-economic status of PCCD Workers and effective knowledge about it from 250 respondents aged between 25 and above 45 years of age the socio-economic status of PCCD Workers in Yangon (West District). The survey is conducted through face-to-face interviews with an appropriate confidentiality disclaimer and designed to obtain information on (a) Demographic Characteristics, (b) Household Condition, (c) Working Condition, (d) Income and Expenditure and (e) Health Condition.

4.3 Survey Finding

The survey findings are presented below in five sections: (1) Demographic Characteristics, (2) Household Condition, (3) Working Condition, (4) Income and Expenditure and (5) Health Condition.

4.3.1 Demographic Characteristics

The demographic characteristics of the WA workers respondents which include gender, race, age, education levels, Marital Status and Family Size as shown in Tables are collected to identify the nature of the WA workers at YCDC.

Table (4.1) Demographic Characteristics of Respondents

| No. | Descriptions | Characteristics | Respondents | Percentage |
|-----|------------------|-----------------|-------------|------------|
| 1 | Gender | Male | 125 | 50 |
| | | Female | 125 | 50 |
| | | Total | 250 | 100 |
| 2 | Age Distribution | Under 25 years | 50 | 20 |
| | | 26 – 35 Years | 78 | 31 |
| | | 36 – 45 Years | 70 | 28 |
| | | Above 45 Years | 52 | 21 |
| | | Total | 250 | 100 |
| 3 | Ethnic | Burma | 234 | 93.6 |
| | | Indian | 3 | 1.2 |
| | | Kayin | 12 | 4.8 |
| | | Rakhaine | 1 | 0.4 |
| | | Total | 250 | 100 |
| 4 | Education Level | Read and Write | 50 | 20.0 |
| | | Primary School | 89 | 35.6 |
| | | Middle School | 79 | 31.6 |
| | | High School | 26 | 10.4 |
| | | University | 6 | 2.4 |
| | | Total | 250 | 100 |
| 5 | Marital Status | Single | 18 | 7.2 |
| | | Married | 205 | 82 |
| | | Broken | 12 | 4.8 |
| | | Widowed | 15 | 6 |
| | | Total | 250 | 100 |
| 6 | Family Member | Under 5 | 199 | 79.6 |
| | | Over 5 | 91 | 20.4 |
| | | Total | 250 | 100 |

Source: Survey data, 2018

Table (4.1) shows the distribution of sample WA workers or respondents from survey areas, by gender. Total 250 of the respondents completely participate and it consists of 50 % were men and the remaining 50 % were women. It is found that male and female workers are equal in this townships. The number of respondents by age group shows that the age under 25 years is 20 %. Most of the respondents have the age group of between 26-35 years old (78 or 31 %), followed by between 36-45 years old (70 or 28%) and above 45 years old (52 or 21%). The data indicates most of workers that includes in middle age is still working in Pollution Control and Cleaning Department. Regarding the race, most of the respondents were Bamar 93.6 %, 1.2 % is India, 4.85% is Kayin and only 1(0.4%) each for Rakhine. Education Level of the respondents, most of them were primary school level 89 (35.6%) and second highest level were middle school 79 (31.6). Lower level of respondents were university level 6 (2.4%) and only about one - fifths of respondents have read and write 50 (20%). It is found out that there are many respondents who do not educate.

The marital status of respondents as related to the household, most of respondents are married 205 (82%) and lower of respondents are broken 12 (4.8%). A few of respondents are widowed 15 (6%) and the rest 18 or 7.2% are single. The size of family member can be seen that 79.6 % of total respondents have at least 5 members in the house and 20.4 % is over 5 members in the survey Area.

4.3.2 Household Condition of Respondents

Table (4.2) shows the household condition of the WA workers which current condition of housing and housing facilities as shown in Tables are collected to identify the household condition of the WA workers at YCDC.

Table (4.2) Current Condition of Housing

| Current Condition of Housing | Respondents | Percentage |
|-------------------------------------|--------------------|-------------------|
| Private house | 1 | 0.4 |
| Rent house | 1 | 0.4 |
| Servant's Quarters | 248 | 99.2 |
| Total | 250 | 100 |

Source: Survey Data (2018)

In table (4.2) shows current condition of housing. It is said that most of workers live in servant's quarters because it is arranged by the Pollution Control and Cleansing Department. It is found that 0.4 of respondents live a private house and renting a house because servant's quarter is small to live for members of family.

(a) Housing Facilities

Table (4.3) shows the housing facilities of WA workers include Fresh Water, Electricity and Servant's Quarter.

Table (4.3) Housing Facilities

| Facilities | Satisfied | | Unsatisfied | |
|-------------------|-------------|------------|-------------|------------|
| | Respondents | Percentage | Respondents | Percentage |
| Fresh Water | 204 | 81.6 | 46 | 18.4 |
| Electricity | 250 | 100 | - | - |
| Servant's Quarter | 248 | 99.2 | 2 | 0.8 |

Source: Survey data 2018

The survey shows that 99.2 percent of respondents satisfied to live in servants' quarters, but 0.8 percent of respondents are not satisfied on theirs servants' quarters because quarters are small to live in and quarters are 10'×10' and not comfortable for live. When asked about their feeling related to fresh water, households which used purified water and pumps as their main source of fresh water supply generally expressed positive emotions. Only few of respondents expressed negative emotion for fresh water. But they pay fee for purified water. All of workers are satisfied for electricity but the electricity bill is charged.

4.3.3 Working Condition

Working condition of respondents of the WA workers which include working experience of respondents, job distractions of respondents, preference of work load, situation of duty, satisfaction of turn system, working hours, working environment and family size as shown in tables are collected to identify the working condition of respondents of the WA workers at YCDC.

(a) Working Experience of Respondents

Table (4.4) shows working experience of respondents include from less than 1 year to above 16 years.

Table (4.4) Working Experience Distribution of Respondents

| Working Experience | No of Respondents | Percentage |
|---------------------------|--------------------------|-------------------|
| Less than 1 year | 40 | 16 |
| Between 2-5 years | 89 | 35.6 |
| Between 6-10 years | 57 | 22.8 |
| Between 11-15 years | 35 | 14 |
| Between 16 years or more | 29 | 11.6 |
| Total | 250 | 100 |

Source: Survey Data (2018)

The working experience distribution varies from less than 1 year, between 2-5 years, between 6-10 years, between 11-15 years and between 16 years or more. It could be seen that the highest experience level is above 16 years and lowest experience level is less than 1 year. A few of workers has highest experience. Most of them have been working between 2-5 years. The surveys shows that 16 percent of workers mentions that their experience is less than 1 years and other workers mentions that their experience is between 6-10 years and 11-15 years.

(b) Job Descriptions of Respondents

Table (4.5) shows job distraction of respondents include sweeping, collection on vehicle and rotating of sweeping and collection on vehicle.

Table (4.5) Job Distractions of Respondents

| Job Descriptions | No of Respondents | Percentage |
|---|--------------------------|-------------------|
| Sweeping | 86 | 34.4 |
| Collection on Vehicle | 64 | 25.6 |
| Rotating of Sweeping and Collection on Vehicle | 100 | 40 |
| Total | 250 | 100 |

Source: Survey Data (2018)

The table (4.5) shows, Employees have to work sweeping, collection on vehicle and rotating of sweeping and collection on vehicle. Their supervisors manage them about their work. Most of workers have to work rotating of sweeping and collection on vehicle. The survey data shows that 34.4 percent of workers mentions that their job is sweeping and 25.6 percent of workers mentions that their job is collection on vehicle.

(c) Preference of work load

Table (4.6) shows preference of work load include about their job that employers more prefer what they want to work.

Table (4.6) Preference of Work Load

| Descriptions | No of Respondents | Percentage |
|-----------------------|--------------------------|-------------------|
| Sweeping | 145 | 58 |
| Collection on Vehicle | 105 | 42 |
| Total | 250 | 100 |

Source: Survey Data (2018)

The table (4.6) shows, most of respondents 145 (58%) are prefer to sweeping in their work and 105 (42%) of the respondents are prefer to collection on vehicle. Sweeping than collection to vehicle because they can get extra income from recyclable materials.

(d) Types of Duty

Table (4.7) shows the situation of duty is divided into two shifts day, night and rotation day and night.

Table (4.7) Types of Duty

| Descriptions | No of Respondents | Percentage |
|------------------------|--------------------------|-------------------|
| Day | 118 | 47.2 |
| Night | 119 | 47.6 |
| Rotation Day and Night | 13 | 5.2 |
| Total | 250 | 100 |

Source: Survey Data (2018)

The table (4.7) shows most of the respondents 119 (47.6%) are responsibility of duty on night. While observing the less of respondents 13 (5.2%) are responsibility of duty on rotation day and night and the rest 118 (47.2%) of the respondents are duty on day.

(e) Satisfaction of Turn System

Table (4.8) shows satisfactions of turn system are consist of satisfaction on day and satisfaction on night.

Table (4.8) Satisfaction of Turn System

| Distractions | No of Respondents | Percentage |
|-----------------------|--------------------------|-------------------|
| Satisfaction on Day | 138 | 55.2 |
| Satisfaction on Night | 112 | 44.8 |
| Total | 250 | 100 |

Source: Survey Data (2018)

The table (4.8) shows, 55.2 percent of respondents satisfy working during the day and 44.8 percent of respondents satisfy working during the night. They are more satisfied with working during the day because night shift can cause vehicle accidents.

(f) Working Hours

The working hours are described satisfied and unsatisfied of working hours. The overtime work include always doing overtime work, sometimes doing overtime work and never doing overtime work.

Table (4.9) Working Hours

| No. | Distractions | Characteristics | No of Respondents | Percentage |
|------------|---------------------|------------------------|--------------------------|-------------------|
| 1 | Work time | Satisfied | 234 | 93.6 |
| | | Unsatisfied | 16 | 6.4 |
| | | Total | 250 | 100 |
| 2 | Overtime Work | Always | 11 | 4.4 |
| | | Sometimes | 47 | 18.8 |
| | | Never | 192 | 76.8 |
| | | Total | 250 | 100 |

Source: Survey Data (2018)

The table (4.9) shows, 93.6 percent of respondents satisfy for work hours and 6.4 percent of respondents do not satisfy for work hours. Satisfying for work hours are more than unsatisfying for work hours because working hours are not convenient for them. It is found out that 18.8 percent of respondents sometimes have to do overtime work. Most of workers mentioned that they have not to do overtime work. A few of workers always have to do overtime work.

(g) Working Environment

Following the table show satisfied and unsatisfied of their working environment such as empowerment, leave, job Stability, supporting for accident and mutual helping.

Table (4.10) Working Environment

| Description of Working Environment | Satisfied | | Unsatisfied | | Total | |
|------------------------------------|--------------------|-------------|--------------------|------------|--------------------|------------|
| | No. of Respondents | Percent age | No. of Respondents | Percentage | No. of Respondents | Percentage |
| Empowerment in work | 34 | 13.6 | 216 | 86.4 | 250 | 100 |
| Leave | 226 | 90.4 | 24 | 9.6 | 250 | 100 |
| Job Stability | 232 | 92.8 | 18 | 7.2 | 250 | 100 |
| Supporting For Accident | 220 | 88 | 30 | 12 | 250 | 100 |
| Mutual Helping | 224 | 89.6 | 26 | 10.4 | 250 | 100 |

Source: Survey Data (2018)

The Table (4.10) shows that the workers are satisfied with the environment in which implement the job. The question was created how workers empowerment in work. The respondents 13.6% are satisfied empowerment or self-determination on their work. The respondents 86.4% are not satisfied empowerment or self-determination on their work. WA workers work by command of supervisor. The question was created how supervisor response when the employees take leave. The respondents 90.4% are satisfied upon supervisor response when workers take

leave/absent to work but respondents 9.6% are not satisfied. Generally, workers have leaves but some depend on their supervisor. As per key informal interview with employers and the organization have the leave benefit according to labor law. The respondents 92.8 % do not worry to remove for their job, on the other hand, WA workers feel job stability. The respondents 88 % are satisfied for supporting of accident. If respondents of face some of accident, supervisors help supporting on them. The respondents 89.6 % have mutual helping from their colleagues. Workers help other employees during the working hour.

4.3.4 Income and Expenditure

Income and expenditure of respondents of the WA workers which include shown in Payment System of Respondents, Monthly Household Expenditure of WA Workers, Ownership of Household Assets and Savings and Debt of Respondents tables are collected to identify the income and expenditure of the WA workers at YCDC.

(a) Payment System of Respondents

Following the table show payment system (daily and monthly). All of workers are paid salary once a week by their employer.

Table (4.11) Payment System of Respondents

| Payment System | Respondents | Percentage |
|-----------------------|--------------------|-------------------|
| Daily | 250 | 100 |
| Total | 250 | 100 |

Source: Survey Data (2018)

The table (4.11) shows all respondents earned between 4001 and 5000 kyats on daily basis. They cannot entitle for promotion, gratuity, pension but they can get extra earning from recyclable materials.

(b) Monthly Household Expenditure of WA Workers

Table (4.12) shows, the expenditure of food items consist of the expenditure of household on food, alcohol, tobacco, tea and betel are included. The household expenditure on health, education, clothing, Electricity and Taxes, social cost and other

expenditure are include in non-food items. The basic need of human being are food, shelter and clothing and every household in my survey had used their income on food, clothing and schooling.

Table (4.12) The Expenditure of Food Items

| No. | Descriptions | Amount (Kyats) | No. of Households (Food Items) | Percentage |
|-----|---------------------------------|-----------------|--------------------------------|------------|
| 1 | Food | Under 100000 | 110 | 44 |
| | | 100001-200000 | 101 | 40.4 |
| | | 200001-300000 | 18 | 7.2 |
| | | Above 300000 | 8 | 3.2 |
| | | Not Regular | 13 | 5.2 |
| | | Total | 250 | 100 |
| 2 | Alcohol, tobacco, tea and betel | Under 50000 | 187 | 74.8 |
| | | 50001-100000 | 2 | 0.8 |
| | | 100001-150000 | 1 | 0.4 |
| | | Above 150000 | 5 | 2 |
| | | Not Regular | 55 | 22 |
| | | Total | 250 | 100 |

Source: Survey Data (2018)

Table (4.12) shows the expenditure of food items. It is found that the 110 households or 44 % of household having the expenditure of under 100000 kyats on food is highest percentage. The number of households with lowest percentage is 3.2, which expenditure is above 300000 kyats per month for food. 13 households or 52 % of respondents are not regular for food. The 187 households or 74.8 % of household having the expenditure of under 50000 kyats on alcohol, tobacco, tea and betel is highest percentage. The number of households with lowest percentage is 0.4, which expenditure is 100001-150000 kyats per month for alcohol, tobacco, tea and betel. 55 households or 22 % of respondents are not regular for alcohol, tobacco, tea and betel.

Table (4.13) Expenditure of Non-food Items

| No. | Descriptions | Amount (Kyats) | No. of Households (Food Items) | Percentage |
|-----|-----------------------|-------------------|--------------------------------------|------------|
| 1 | Health Treatments | Under 100000 | 149 | 59.6 |
| | | 100001-200000 | 3 | 1.2 |
| | | 200001-300000 | 2 | 0.8 |
| | | Above 300000 | 6 | 2.4 |
| | | Not Regular | 90 | 36 |
| | | Total | 250 | 100 |
| 2 | Education | Under 100000 | 125 | 50 |
| | | 100001-200000 | 4 | 1.6 |
| | | Above 200000 | 9 | 3.6 |
| | | Not Regular | 112 | 44.8 |
| | | Total | 250 | 100 |
| 3 | Electricity and Taxes | Under 10000 | 233 | 93.2 |
| | | 10001-20000 | 2 | 0.8 |
| | | Not Regular | 15 | 6 |
| | | Total | 250 | 100 |
| 4 | Social cost | Under 10000 | 156 | 62.4 |
| | | 10001-20000 | 1 | 0.4 |
| | | 20001-30000 | 1 | 0.4 |
| | | Above 30000 | 3 | 1.2 |
| | | Not Regular | 89 | 35.6 |
| | | Total | 250 | 100 |
| 5 | Other expenditure | Under 50000 | 77 | 30.8 |
| | | 50001-100000 | 1 | 0.4 |
| | | Above 100000 | 15 | 6 |
| | | Not Regular | 157 | 62.8 |
| | | Total | 250 | 100 |

Source: Survey Data (2018)

Table (4.13) shows the expenditure of non-food items. As the cost of living is significant within these years, the cost for health and education is higher and higher. The expense and income sometimes is unequal. It is found that the 149 households or 59.6 % of household having the expenditure of under 100000 kyats on Health Treatments is highest percentage. The number of households with lowest percentage is 0.8, which expenditure is between 200001-300000 kyats per month for health treatment. 90 households or 36 % of respondents are not regular for health.

The survey data shows that 50 % of household having the expenditure of under 100000 kyats on education is highest percentage. The number of households with lowest percentage is 1.6, which expenditure is between 100001-200000 kyats per month for education. 112 households or 44.8 % of respondents are not regular for education.

The survey data shows that 93.2 % of household having the expenditure of under 100000 kyats on electricity and taxes is highest percentage. The number of households with lowest percentage is 0.8, which expenditure is between 10001-20000 kyats per month for electricity and taxes. 15 households or 6 % of respondents are not regular for electricity and taxes.

The survey data shows that 62.4 % of household having the expenditure of under 10000 kyats on social cost is highest percentage. The number of households with lowest percentage is 0.4, which expenditure is between 10001-20000 and 20001-30000 kyats per month for social cost. It is found out that 89 households or 35.6 % of respondents are not regular for social cost.

The survey data shows that 62.8 % of household having not regular on other expenditure is highest percentage. The number of households with lowest percentage is 0.4, which expenditure is between 50001-100000 kyats per month for other expenditure.

(c) Ownership of Household Assets

Household assets can be found in the surveyed WA workers are Car, Motor-bike, Bicycle, Trishaw, TV, VCD,DVD,EVD, Radio, Cassette, Refrigerator, Electric fan, Electric rice cooker, Hand - phone, Cupboard and Sewing Machine.

Table (4.14) Household Assets of Respondents

| No. | Assess Items | Assets Owned Workers | Percent | No Owned Workers | Percent |
|-----|----------------------|----------------------|---------|------------------|---------|
| 1 | Car | 0 | 0.00 | 250 | 100 |
| 2 | Motor-bike | 18 | 7.2 | 232 | 92.8 |
| 3 | Bicycle | 66 | 26.4 | 184 | 73.6 |
| 4 | Trishaw | 14 | 5.6 | 236 | 94.4 |
| 5 | TV | 163 | 65.2 | 87 | 34.8 |
| 6 | VCD,DVD,EVD | 131 | 52.4 | 119 | 47.6 |
| 7 | Radio, Cassette | 40 | 16 | 210 | 84 |
| 8 | Refrigerator | 41 | 16.4 | 209 | 82.6 |
| 9 | Electric fan | 183 | 73.2 | 67 | 26.8 |
| 10 | Electric rice cooker | 202 | 80.8 | 48 | 19.2 |
| 11 | Hand - phone | 179 | 71.6 | 71 | 28.4 |
| 12 | Cupboard | 98 | 39.2 | 152 | 60.8 |
| 13 | Sewing Machine | 11 | 4.4 | 239 | 95.6 |

Source: Survey Data (2018)

According to the table (4.14), no one have own car and a few people own Motor-bike as their property. The respondents 26.4 % use bicycle for their short distance travelling. In the study area of four townships it is found that 52.4 percent of households own VCD, DVD, EVD, 65.2 percent of households own TV, 16 percent of household own radio and cassette and 71.6 percent of households own hand phone which show that the workers have quite good communication with the outside world. In the study area of four townships it is found that 39.2 percent of households own cupboard, 80.8 Percent of households own electric rice cooker, 73.2 Percent of household own electric fan, 5.6 percent of households own trishaw and 16.4 percent of households own refrigerator so household have moderate better life.

(d) Savings and Debt of Respondents

Following the table describe saving income or no saving income and borrowing from other people or no borrowing from other people.

Table (4.15) Savings and Debt of Respondents

| Distractions | No of Respondents | Percentage |
|---------------------|--------------------------|-------------------|
| Savings | 58 | 23.2 |
| No saving | 192 | 76.8 |
| Total | 250 | 100 |
| Loan | 77 | 30.8 |
| No Loan | 173 | 69.2 |
| Total | 250 | 100 |

Source: Survey Data (2018)

The table (4.15) shows 23.2 percent of respondents have savings and 76.8 percent of respondents do not have savings. The data show that 30.8 percent of respondents have a loan and 69.2 percent of respondents do not have a loan.

4.3.5 Health Condition

Health Condition of the WA workers include Supporting of Safety Implement, Disease Frequently Experienced by WA Workers and Health Seeking Behavior of the Respondents. The tables show to identify the Health Condition of the WA workers at YCDC.

(a) Supporting of Safety Equipment

Supporting of safety equipment is essential for all WA workers. The following table shows distribution of safety equipment among workers.

Table (4.16) Supporting of Safety Equipment

| Supporting of Safety Equipment | Receive | | Not Receive | |
|---------------------------------------|--------------------------|-------------------|--------------------------|-------------------|
| | No of Respondents | Percentage | No of Respondents | Percentage |
| Glove | 238 | 95.2 | 12 | 4.8 |
| Boot | 170 | 68 | 80 | 32 |
| Mask | 235 | 94 | 15 | 6 |
| Uniform with Reflection | 236 | 94.4 | 14 | 5.6 |

Source: Survey Data (2018)

The table (4.16) shows 95.2 percent of respondents receive glove but 4.8 percent of responds do not receive glove. Another 68 percent of respondents receive boot but 32 percent of responds do not receive boot. The data showed that 94 percent of respondents receive mask but 6 percent of responds do not receive mask. Most of respondents receive uniform with reflection but 5.6 % of responds do not receive uniform with reflection. Most of respondents receive glove, mask, boot and reflection but other respondents do not receive fully.

(b) Mostly Experienced Diseases by Respondents

Following the table show that mostly experienced diseases by WA workers such as Diarrhea, TB, Skin Disease, Hepatitis, Tetanus and other.

Table (4.17) Mostly Experienced Diseases by WA Workers

| Mostly Experienced Disease by WA Workers | Respondents | Percentage |
|---|--------------------|-------------------|
| Diarrhea | 24 | 9.6 |
| TB | 7 | 2.8 |
| Skin Disease | 50 | 20 |
| Hepatitis | 11 | 4.4 |
| Tetanus | 1 | 0.4 |
| Other | 17 | 6.8 |

Source: Survey Data (2018)

Table (4.17) shows, Mostly Experienced Diseases by Respondents, this was multiple response question and 9.6% of the respondents had suffer from diarrhea. The data show that 2.8 % of them had TB, 4.4 % suffered hepatitis. 20 % had suffered from skin disease such as (chickenpox, itch, eczema, freckle, etc.). A few of respondent suffered from tetanus. Other of the respondents suffered other disease such as (dengue fever, broken hands and legs).

(c) Health Problem Solving of the Respondents

Employees solve their health problem such as taking medicine their selves, go to Clinic, and take medicine at a pharmacy.

Table (4.18) Health Treatment of the Respondents

| Treatment | Respondents | Percentage |
|-------------------------------|--------------------|-------------------|
| Taking Medicine their selves | 69 | 27.6 |
| Go to Clinic | 131 | 52.4 |
| Taking Medicine at a pharmacy | 50 | 20 |
| Total | 250 | 100 |

Source: Survey Data (2018)

The table (4.18) shows 27.6% of respondents bought medicine themselves at the local shop or pharmacy when workers get sick. It was found out that 20% of the respondents solve their health problem such as mixing medicine from small shop and traditional medicine. Other 52.4 % of respondent solve their health problem by going clinic.

CHAPTER V

CONCLUSION

5.1 Findings

Socio-economic status, labor safety and health safety of PCCD worker are mainly studied in this thesis. With development and urbanization, various forms of waste discharge arising from human activities have increased, ranging from sewerage, garbage, night solid, industrial and hazardous waste. Lack of human resource for PCCD is the main problem and there are only about 3800 worker available to cleanse all over Yangon. So, waste collection workers are exposed to work load stressors which may affect their quality of life. Workers are not satisfied for work hours because they are working midnight to dawn. Workers are lack of awareness on health because most of them are illiterate. Most are on daily wages and they are hoping that they will become permanent workers. This study assesses (1) Prevalence of health problem and (2) standard of living (3) problem of work places (4) workers face injuries or accidents (5) their education.

In this study, by using the purposive random sampling method, primary data are collected by face to face interview with structured questionnaires on (250) workers. This study focuses on WA workers which are implemented by Yangon (Kyauktada, Latha, Lammadaw, Panbetann). Total of 250 workers, 106 from Kyauktada, 100 from Panbetann, 25 from Latha and 19 from Lamadaw. There are ten townships in West District and total number of WA employees is (1098).The first state was chosen the 4 townships of West District. They are 1) Kyauktada 2) Latha 3) Lammadaw 4) Panbetann Townships. The second state, WA employees were selected by all sample from 4 townships. The questionnaires included Section A (Socio-Demographic data), Section B (Working Condition), Section C (Income and Expenditure), Section D (Health Condition) and Section E (Household Condition).The socio-demographic characteristics of the WA workers respondents which include gender, race, age, education levels, Marital Status and Family Size.

Total 250 of the respondents completely participate and it consists of 50 % were men and 50 % were women. It is found out that there are many respondents who do not educate.

Regarding income and expenditure, all respondents earned 4800 kyats on daily basis. Workers cannot entitle for promotion, gratuity, and pension. As the cost of living is significant within these years, the cost for health and education is higher and higher. The expense and income sometimes is unequal.

Regarding housing condition, most of workers live in servant's quarters because it is arranged by the Pollution Control and Cleansing Department. Some are not satisfied because quarter is small to live. It has only (10'x10'). Fresh water supply generally expressed positive emotions. All of workers are satisfied for electricity.

Regarding working condition, a few of workers has highest experience. Most of them have been working between 2-5 years. Their supervisors manage them about their work. Sweeping than collection to vehicle because they can get extra income from recyclable materials. Workers cannot decide about their job hours because they are not empowerment their duty. They are more satisfied with working during the day because night shift can cause vehicle accidents. Most of workers mentioned that they have not to do overtime work. A few of workers always have to do overtime work. Workers have leaves but some are depend on their supervisor. As per key in format interview with employers and the organization have the leave benefit according to labor law. If respondents of face some of accident, supervisor help supporting on them. Workers are satisfied job stability that they need's to worry job for next day.

Regarding health condition, Most of respondents receive glove, mask, boot and reflection but other respondents do not receive fully. Most of workers suffer from skin disease. Other of the respondents suffered other disease such as (abortion, dengue fever, pained uterus in menstrual time, broken hands and legs). Most of workers solve their health problem by going to clinic.

5.2 Recommendations

Solid waste management in Yangon Cities entirely labor intensive, so it is necessary to retain staffs. Retaining staff is regarded as part of the planning process and to get effective performance management. Municipal worker from pollution control and cleansing department are respectful persons because they are doing the job nobody wants to do it. They should be encouraged by superior officers for their efficiency and job well done. They just think about their job to be proud and not to feel inconsequential. There must have a good working condition not to get health hazards. They should wear gloves, boots, masks, hat, and uniform with reflection and so on.

Pollution control and cleansing department, under YCDC, should formulate the future action to maintain clean land to safeguard public health. Recommendations for the sustainable management system can be described as follow:

The socioeconomics condition is found to be low in WA workers. Occupational health is a state of the highest degree of physical, mental and social wellbeing of workers in all occupations. Municipal workers need to occupational health more than others because they are working with risks like gems and harmful chemicals. PCCD under YCDC should formulate the occupational health service and protective measures policy. Works health including their mental health and their problems feedbacks should be monthly examined by their supervisors. Health care can be improved by open a free dispensary for workers or a dispensary with low charges.

Streets sweeping worker should clean the road in the early morning and at night time to avoid busy traffic and accident. YCDC must supply their worker with water supplies, food supplies and shelter during their working hours.

Finally, refuse disposal problems can be solved with public awareness and cooperation. If public did follow the rules and regulation regarding with refuse disposal. There would not be more work burden on PCCD workers. People have very little interest in cleanliness outside their homes. So, public must be educated about refuse disposal together with police enforcement of the law.

Supervise on workers to wear gloves, boots, masks, hat, and uniform with reflection. Workers should be permanent instead of work admit. Maintain and build

expand servants' quarter with sufficient square feet. The training must be given to them, so workers will become more skillful in their job. High technologies with new equipments should be used.

Maintain and build expand servants' quarter with sufficient square feet. Workers should entitle for promotion, gratuity, and pension, when workers retire. Workers should be permanent instead of work admit. The study recommended to the government to prioritize the policy on minimum wage standard and capacity development for workers especially informal education for workers and government to give awareness to the workers. Workers should be permanent instead of work admit.

REFERENCES

1. Frings. Dresen, M.H.W. Kemper and H.C.G. Stassen A.R.A. (1995). *Guidelines for energetic load in three methods of refuse collecting*. 38:2056–64.
2. Glawe and Ulrich. (2012). *Solid Waste Management in Least Development in Least Developed Asian Countries-A Comparative Analysis*, pp 6-7.
3. Goode and Erica. (1999). "For Good Health, it Helps to be Rich and important". The New York Times.
4. Graham, S and Lowe. (2004). *Healthy Workplace Strategies: Creating Change and Achieving Result*. Health Canada.
5. Jayakrishan Thayil and Bhasker Roa. (2013). *Occupational Health Problems of Municipal Solid waste workers in India*.
6. Jensen, RT. (2001). *Development of indicators for child labour*. Geneva: ILO, IPEC.
7. Kuijer P.P.F.M and Frings-Dresen, M.H.W. (2004). *World at work: Refuse collectors*. 61:282–6.
8. Kassouf, A.L. McKee M and Mossialos, E. (2001). *Early entrance to the job market and its effects on adult health: evidence from Brazil*. 16:21–8.
9. Marmot and Michael. 2004. *The Status Syndrome: How Social Standing Affects Our Health and Longevity*. New York: Owl Books.
10. McConnell, Brue and Macpherson. (2007). *Contemporary Labor Economics*, 7th edition, p.211.
11. Population of Cities in Myanmar. (2019). Retrieved from: world population review.com
12. Roy Je. (2015). "A Study on Solid Waste Management System and Working Environment of PCCD Workers in Yangon". Unpublished (MPA Thesis), Yangon University of Economics, Yangon, Myanmar.
13. Silva, M.C. Fassa, A.G and Siqueira C.E. (2005). *World at work: Brazilian Ragpickers*. 62:736–40.
14. Tamer, M. Ismail. (2015). *Health problems of Municipal Solid Waste Workers in India*.
15. Wouters, I. M. Hilhorst, S.K.M and Kleppe, P. (2002) *Upper airway inflammation and respiratory symptoms in domestic waste collectors*. 59:106–12.
16. YCDC. (2016). *Pollution Control and Cleansing Department, 2015, 2016 and 2017 annual Report*, Yangon, Myanmar. Retrieved from [https:// www.ycdc.gov.mm](https://www.ycdc.gov.mm).

REFERENCES

1. Adler, Nancy, E and Boyce. (1994). *Socioeconomic status and health: The challenge of the gradient*. *American Psychologist*. 49(1). pp15–24. Retrieved from <https://www.researchgate-net>.
2. American Psychological Association Task Force on Socioeconomic Status. (2007). *Report of the APA Task Force on Socioeconomic Status*. Retrieved from <http://www.apa.org/pi/ses/resources/publications/social-class-curricula.pdf>.
3. Boushey, Heather and Weller, Christian. (2005). *Inequality Matters: The Growing Economic Divide in America and its Poisonous Consequences*. Pp 27-40. Demos. Retrieved from https://www.wikipedia.org/wiki/socioeconomic_status.
4. Frings. Dresen, M.H.W. Kemper and H.C.G. Stassen A.R.A, (1995). *Guidelines for energetic load in three methods of refuse collecting*. 38:2056–64.
5. Glawe and Ulrich. (2012). *Solid Waste Management in Least Development in Least Developed Asian Countries-A Comparative Analysis*, pp 6-7.
6. Goode and Erica. (1999). "For Good Health, it Helps to be Rich and important" *The New York Times*.
7. Graham, S and Lowe. (2004). *Healthy Workplace Strategies: Creating Change and Achieving Result*. *Health Canada*.
8. Hunt, J. (1972). Early Education and low class.
9. Jayakrishan Thayil and Bhasker Roa. (2013). *Occupational Health Problems of Municipal Solid waste workers in India*.
10. Jensen, RT. (2001). *Development of indicators for child labour*. Geneva: ILO, IPEC.
11. Kuijer P.P.F.M and Frings-Dresen, M.H.W. (2004). *World at work: Refuse collectors*. 61:282–6.
12. Kassouf, A.L. McKee M and Mossialos, E. (2001). *Early entrance to the job market and its effects on adult health: evidence from Brazil*. 16:21–8.
13. Lareau and Annette. (2003). *Unequal Childhoods: Race, Class, and Family Life*. University of California Press.
14. Mie Mie Soe (2010). *Municipal Service of Promoting Yangon City*. Unpublished (MPA Thesis), Yangon University of Economics, Yangon, Myanmar.

15. Marmot and Michael. 2004. *The Status Syndrome: How Social Standing Affects Our Health and Longevity*. New York: Owl Books.
16. McConnell, Brue and Macpherson. (2007). *Contemporary Labor Economics*, 7th edition, p.211.
17. Milne, A. & Plourde, L. A. (2006). Factors of a Low-SES Household: What Aids Academic Achievement?
18. Roy Je. (2015). A Study on Solid Waste Management System and Working Environment of PCCD Workers In Yangon. Unpublished (MPA Thesis), Yangon University of Economics, Yangon, Myanmar.
19. Staff. (2012). Education and Socioeconomic Status. American Psychological Association. Retrieved from <http://www.apa.org/pi/ses/resources/publications/social-class-curricula.pdf>.
20. Silva, M.C. Fassa, A.G and Siqueira C.E. (2005). *World at work: Brazilian ragpickers*. 62:736–40.
21. Tamer, M. Ismail. (2015). Health problems of Municipal Solid Waste Workers in India.
22. Wisdom Supreme. (2008). Retrieved from <http://www.wisdomsupreme.com/dictionary/absolute-income-hypothesis.php>.
23. Wouters, I.M. Hilhorst, S.K.M and Kleppe, P. (2002) *Upper airway inflammation and respiratory symptoms in domestic waste collectors*. 59:106–12.
24. YCDC, (2016). Pollution Control and Cleansing Department, 2015, 2016 and 2017 annual Report, Yangon, Myanmar. Retrieved from [https:// www.ycdc.gov.mm](https://www.ycdc.gov.mm).

Questionnaires

| A. Demographic Characteristics | | |
|---------------------------------------|------------------------------|-----------------------|
| A1 | Gender | 1. Male |
| | | 2. Female |
| A2 | Age Distribution | 1. Under 25 years |
| | | 2. 26 – 35 Years |
| | | 3. 36 – 45 Years |
| | | 4. Above 45 Years |
| A3 | Ethnic | 1. Burma |
| | | 2. India |
| | | 3. Kayin |
| | | 4. Rakhaine |
| A4 | Education Level | 1. Read and Write |
| | | 2. Primary School |
| | | 3. Middle School |
| | | 4. High School |
| | | 5. University |
| A5 | Marital Status | 1. Single |
| | | 2. Married |
| | | 3. Broken |
| | | 4. Widowed |
| A6 | Family Member | 1. Under 5 |
| | | 2. Over 5 |
| B. Household Condition | | |
| B1 | Current Condition of Housing | 1. Private house |
| | | 2. Rent house |
| | | 3. Servant's Quarters |
| B2 | Housing Facilities | 1. Fresh Water |
| | | 2. Electricity |
| | | 3. Servant's Quarter |
| C. Working Condition | | |
| C1 | Working Experience | 1. Less than 1 year |
| | | 2. Between 2-5 years |
| | | 3. Between 6-10 years |

| | | |
|----------------------------------|---------------------------------|---|
| | | 4. Between 11-15 years |
| | | 5. Between 16 years or more |
| C2 | Job Distractions | 1. Sweeping |
| | | 2. Collection on Vehicle |
| | | 3. Rotating of Sweeping and Collection on Vehicle |
| C3 | Preference of work load | 1. Sweeping |
| | | 2. Collection on Vehicle |
| C4 | Situation of Duty | 1. Day |
| | | 2. Night |
| | | 3. Rotation Day and Night |
| C5 | Satisfaction of Turn System | 1. Satisfaction on Day |
| | | 2. Satisfaction on Night |
| C6 | Working Hours | 1. Satisfied |
| | | 2. Unsatisfied |
| C7 | Overtime Work | 1. Always |
| | | 2. Sometimes |
| | | 3. Never |
| C8 | Working Environment | 1. Empowerment in work |
| | | 2. Leave |
| | | 3. Job Stability |
| | | 4. Supporting For Accident |
| | | 5. Mutual Helping |
| D. Income and Expenditure | | |
| D1 | Payment System | 1. Daily |
| | | 2. Monthly |
| D2 | Food | 1. Under 100000 |
| | | 2. 100001-200000 |
| | | 3. 200001-300000 |
| | | 4. Above 300000 |
| | | 5. Not Regular |
| D3 | alcohol, tobacco, tea and betel | 1. Under 50000 |
| | | 2. 50001-100000 |
| | | 3. 100001-150000 |
| | | 4. Above 150000 |

| | | |
|----|-----------------------|--------------------------|
| | | 5. Not Regular |
| D4 | Health Treatments | 1. Under 100000 |
| | | 2. 100001-200000 |
| | | 3. 200001-300000 |
| | | 4. Above 300000 |
| | | 5. Not Regular |
| D5 | Education | 1. Under 100000 |
| | | 2. 100001-200000 |
| | | 3. Above 200000 |
| | | 4. Not Regular |
| D6 | Electricity and Taxes | 1. Under 10000 |
| | | 2. 10001-20000 |
| | | 3. Not Regular |
| D7 | Social cost | 1. Under 100000 |
| | | 2. 100001-200000 |
| | | 3. 200001-300000 |
| | | 4. Above 300000 |
| | | 5. Not Regular |
| D8 | Other expenditure | 1. Under 50000 |
| | | 2. 50001-100000 |
| | | 3. Above 100000 |
| | | 4. Not Regular |
| D9 | Assess Items | 1. Car |
| | | 2. Motor-bike |
| | | 3. Bicycle |
| | | 4. Trishaw |
| | | 5. TV |
| | | 6. VCD,DVD,EVD |
| | | 7. Radio, Cassette |
| | | 8. Refrigerator |
| | | 9. Electric fan |
| | | 10. Electric rice cooker |
| | | 11. Hand - phone |
| | | 12. Cupboard |
| | | 13. Sewing Machine |

| | | |
|----------------------------|--------------------------------|--------------------------------|
| D10 | Savings | 1. Yes |
| | | 2. No |
| D11 | Loan | 1. Yes |
| | | 2. No |
| E. Health Condition | | |
| E1 | Supporting of Safety Implement | 1. Glove |
| | | 2. Boot |
| | | 3. Mask |
| | | 4. Uniform with Reflection |
| E2 | Disease | 1. Diarrhea |
| | | 2. TB |
| | | 3. Skin Disease |
| | | 4. Hepatitis |
| | | 5. Tetanus |
| | | 6. Other |
| E3 | Health Seeking Behavior | 1. Take Medicine myself |
| | | 2. Go to Clinic |
| | | 3. Take Medicine at a pharmacy |