HEALTH HAZARDS AND THE EFFECTS OF THESE HAZARDS TO THE HEALTH OF THE WORKERS OF THILAFUSHI, MALDIVES

ADAM SUHAIL

THE MALDIVES NATIONAL UNIVERSITY

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ADAM SUHAIL

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Faculty of Health Sciences

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DECLARATION

Name: Adam Suhail

Student Number: 32333

I hereby declare that this Project is the result of my own work, except for quotations and summaries which have been duly acknowledged.

Signature: Date:

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October, 2015

ABSTRACT

Background: This study provides insight into health hazards and the effects of these hazards to the health of the workers of Thilafushi. Thilafushi is known as the island that disposes waste mostly in Maldives, so this island has many health hazards. The aim of this study is to find the health hazards the workers face in Thilafushi and the effects of these hazards to the health. Quantitative technique will be used to find out the health hazards and its effect on health. The whole population was taken as sample group. After collecting the data, it is analyzed by the help of statistical software. Ethics is considered by many ways including the consent form and by ensuring the confidentiality to the participants. Moreover, no women are involved in waste disposal that is 0% and all the workers are male that is 100% and 51.4% people working are from Maldives. Moreover 91.4% people are exposed to sunlight. Moreover, 91.4% people dispose toxic wastes. 70% people visited doctor due to common cold and respiratory diseases. At the end of the study, the main health hazards identified were smoke, toxic wastes and mosquitoes. But the effect to health is minimized due to use of proper safety measures taken such as use of gloves, facemasks, sunscreen, foot wear and eye goggles. Furthermore, those do not use proper safety precaution suffer from respiratory diseases such as acute respiratory infection

Aim: The aim of this study is to find the health hazards the workers face in Thilafushi and the effects of these hazards to the health.

Method: The research design is a cross sectional study and it is a quantitative study which involves the collection of data from the population of Thilafushi and analyzing the data.

Keywords: Age, Gender, Knowledge, Socioeconomics, Health hazards, Thilafushi

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LIST OF ABBREVIATIONS

Below shows the abbreviations for the common terms used in the research.

WHO - World Health Organization

SPSS - Statistical Package for the Social Sciences

USPHS - United States Public Health Services

USA – United States of America

CHAPTER 1

1. INTRODUCTION

1.1. Background to the Study

Health hazard is defined as a danger to health resulting from exposure to environmental pollutants such as asbestos or ionizing radiation, or to a lifestyle influence such as cigarette smoking or chemical abuse (The Farlex medical dictionary, 2013).

People face a number of hazards at work, which may result in injuries, cancer, hearing loss, respiratory, musculoskeletal, cardiovascular, reproductive, neurological, skin and mental disorders (WHO, 2009).

About 150 chemical and biological agents are known for causing cancer. Many of these are found in the workplace, even though occupational cancers are almost entirely preventable through eliminating exposure, substituting safer materials, enclosing processes and ventilation. Worldwide, these occupational exposures account for an estimated 8% of lung cancer, which is the most frequent form of occupational cancer. Occupational exposure to microscopic airborne particles can cause lung cancer, chronic obstructive pulmonary disease, silicosis, asbestosis and pneumoconiosis. About 16% of adult-onset hearing loss worldwide is attributable to occupational noise exposure. Work-related exposure to airborne particulates is estimated to cause 12% of deaths due to chronic obstructive pulmonary disease. Moreover, an estimated 29 000 deaths are caused due to silicosis, asbestosis and

pneumoconiosis, which is caused by silica, asbestos and coal dust exposure (WHO, 2009).

There were 4,101 fatal work injuries amongst men in 2013 compared with 4,277 in the year 2012 (BLS, 2013). In a study done about airborne hazard exposure and the provision of airborne hazard controls in Australian workplaces shows that, workers from age 25 to 44 years had increased chances of reporting exposure to dust compared to workers 55 years or older (Australian Safety and Compensation Council, 2010).

Globally, more than 350 000 workers face their death each year due to unintentional occupational injuries. More than 90% of this injury is borne by men and more than half of the global burden occurs among men working in the WHO South- East Asia and Western Pacific regions. Smoke from solid fuel causes about 21% of lower respiratory infection deaths worldwide, 35% of chronic obstructive pulmonary deaths and about 3% of lung cancer deaths. Of these deaths, about 64% occur in low-income countries, especially in South-East Asia (WHO, 2009).

Thilafushi is a place which has many health hazards, because it is an island used for garbage disposal. Thilafushi first was as a lagoon called Thilafalhu with a length of 7 km and a width of 200 meters at the shallowest regions. It is located between Kaafu atoll's giraavaru and gulhifalhu of Maldives. This island came into existence following a series of considerations and efforts to resolve garbage problem during the early 1990s in Male', Maldives (Rachel & Dylan, 2012).

Today Thilafushi has a landmass of more than 4.6 million square feet (0.43 km^2). The speedy terrestrial growth of Thilafushi was observed by the government, and in November 1997, it was decided that land was to be leased to entrepreneurs interested in acquiring land for industrial purposes (Ministry of Health, 2015).

After Thilafushi became as the “Rubbish Island”, the island is visited by massive waste freighters, garbage excavators and migrant workers paid to handle the trash. For 20 years, this island was presented with almost 330 tons of garbage a day, causing it to swell at a rate of one square meter every 24 hours (Rachel & Dylan, 2012). The haphazard waste increases the number of flies in the area. Commercial activity along with indiscriminate dumping and smoke from burning waste has brought an abundance of toxic materials to the lagoon and air including broken oil drums, asbestos, lead, other noxious metals mix in with daily household garbage items and toxic gases. This makes a dangerous place for the workers to work without proper protection equipment, which leads to a number of health problems.

This study aided to understand and get information about the work environment and the health hazards and the effects of the health hazards to the workers in Thilafushi.

1.2. Problem Statement

The workers in Thilafushi are mostly foreigners. They come to Maldives because they are poor and most works in Maldives are open to the foreigners. They want to get a reasonable salary. So most of them don’t care about their own health, as long as they are able to save money from the things like health care and protection they live their life in this manner. And most of the Maldivians don’t care about them.

In Thilafushi most part of the island is covered with garbage. Different ways are used to dispose this wastes including, burying and burning. Moreover, some workers don’t take proper safety precautions. When the wastes are burning, they don’t wear a face mask or a safety goggle. So lung disease and eye problems are a possible outcome from this carelessness. Most of the garbage contains toxic and hazardous wastes. When they work, most of them don’t wear gloves or proper boots. This may lead to

skin diseases. In this island, they have many heavy machineries and vehicles. Proper safety precautions must be taken. But some of them don't wear even a helmet. This may leads to occupational injuries. The workers of this island work during day time. Without sunscreen, they work in the sunlight. This may cause a number of health problems including skin related diseases, mental disorders and headaches. So it seems like in this island there must be number of health hazards and there must be different effects of this to the workers.

At the end of the study the health hazards and the effects of these health hazards has been understood.

1.3. PURPOSE OF THE STUDY

The purpose of this study is to find the health hazards the workers face in Thilafushi and the effects of these hazards to the health.

1.4. Objectives of the Study

1.4.1. GENERAL OBJECTIVE

- To find the health hazards and the effects of these hazards to the health of the workers of Thilafushi.

1.4.2. SPECIFIC OBJECTIVES

- To identify health hazards in Thilafushi and understand the effects of health hazards to the workers
- To evaluate how much knowledge does the workers have about health hazards and its effects
- To assess the safety precautions taken by the workers when working
- To find the waste disposal methods in Thilafushi

1.5. Research Questions or Hypothesis

- What are the health hazards in Thilafushi?
- What are the effects of these hazards to the health of the workers?
- How much knowledge do the workers have about health hazards and its effects?
- What safety precautions are taken by the workers when working?
- What are the waste disposal methods in Thilafushi?

1.6. Significance of the Study

This study will enable us to understand the situation in Thilafushi better in terms of identifying health hazards as well as understanding the effects. So this will help the workers as well as the government. When the health hazards and its effects are recognized, the workers will be able to avoid them and they are able to save money they spent for health services. And even for the government and the company, the health services needed for the workers will be reduced. So they will be able to save money.

And this study will help the islands, which dispose waste the same way, by burning and burying. So the people of these islands will know the health hazards and its effects. This will help them understand and to take precautions during waste disposal. Therefore the people of that island will be safe from the health impacts from the methods of waste disposal.

1.7. Scope of the Study

Many islands dispose waste by burning or burying. There are health hazards and health problems related to this. But these islands are not chosen because, Thilafushi is known for the only island dedicated to waste disposal and this island has all the health hazards related to garbage that is possible to Maldives.

This study can be applied any island that disposes waste by same manner, by burning and burying. The result of the study will be same even if the study is done in any other island that disposes wastes the same way. But Thilafushi will be perfect because the amount of waste disposal is more compared to other islands. So the study result will be much clear.

Moreover, this study will also be a useful research to Ministry of Health, Ministry of Environment, NGOs and other organizations. Moreover, the study can act as a basis and further research can be done based on the key findings of the research.

1.8. Definition of Terms

Health hazard: a danger to health resulting from exposure to environmental pollutants such as asbestos or ionizing radiation, or to a lifestyle influence such as cigarette smoking or chemical abuse (university, 2014).

Demographic: Studies of a population centered on issues such as age, sex, economic status, education level, level of income and occupation, between others (Investopedia, 2015).

Cross-sectional studies; Cross-sectional studies are studies that are carried out at one time point or over for a short period. They are commonly carried out to estimate the prevalence of the result of interest for a given population (health, 2010) .

Ethical consideration: It is defined as relating to or dealing with morals or the values of morality; relating to right and wrong in behavior. And being in agreement with the directions or values for right manner or repetition, especially the values of a work is ethical contemplation (government, 2010).

CHAPTER 2

2. REVIEW OF LITERATURE

The literature review contains the theoretical framework, the demographic factors including age, gender and socioeconomics. In addition knowledge, safety precautions and health impacts are included.

2.1. The Theoretical Framework

For this study, health belief model is used. The Health Belief Model (HBM) is a psychological model that tries to describe and predict the health behaviors in individuals. This is done by concentrating on the individual's attitudes and beliefs. The HBM was developed in the 1950s by three social psychologists working in the United States Public Health Services (University of Twente, 2014).

The HBM is created on the understanding that a person will take a health associated action (that is for an example, use of safety precaution during waste disposal) if that person feels that a negative health condition (for example, Respiratory diseases) can be prevented, has a positive anticipation that by taking a suggested action, he or she will prevent a negative health condition (for example, taking safety precaution can prevent Respiratory diseases), and Believes that he or she can effectively take a suggested health action (for example, he or she can use safety precaution comfortably and with confidence) (University of Twente, 2014).

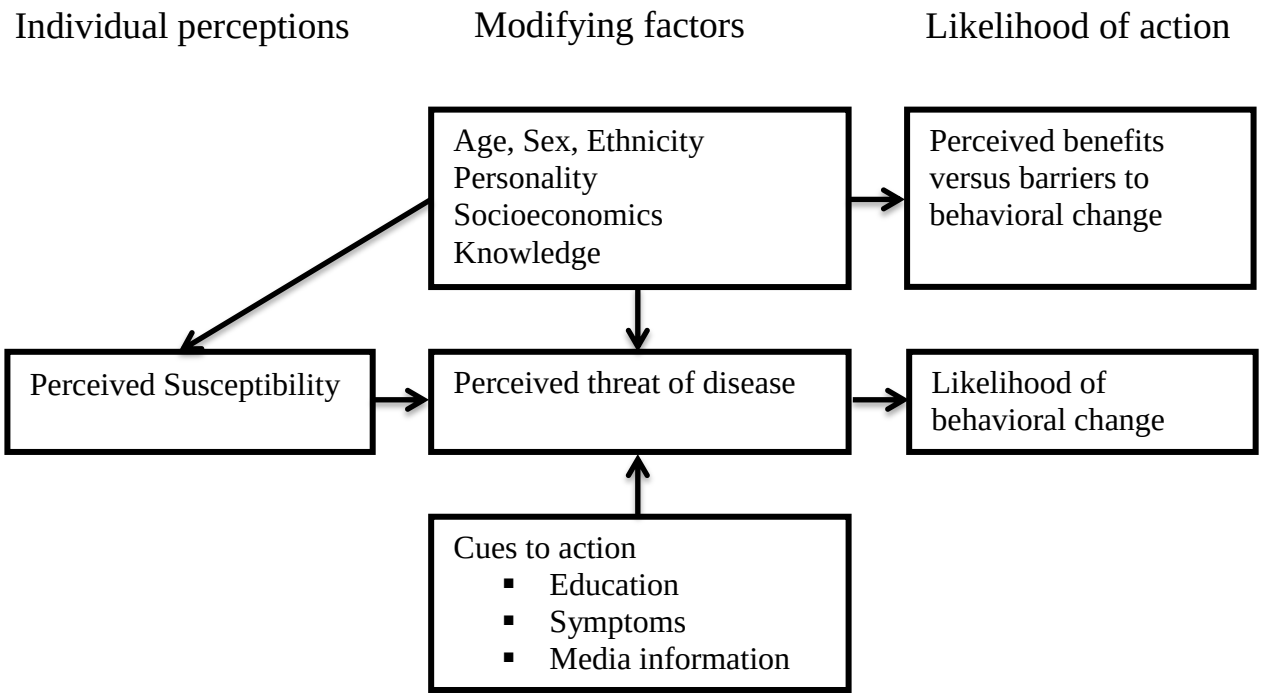

Figure 2.1 Health belief model

2.2. Previous Studies

AGE

People of different age group work in and even minors do work, due to poor life

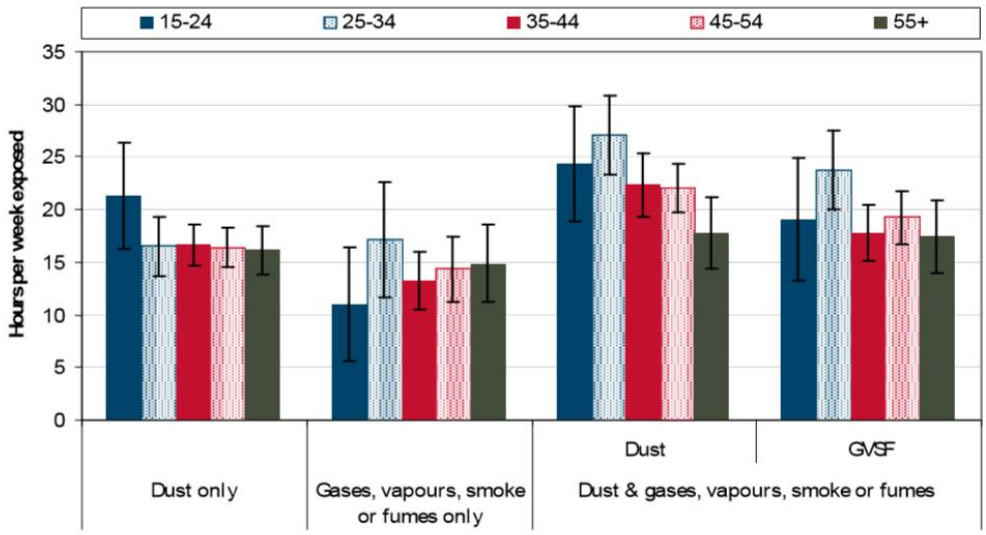

Figure 1.2 The mean duration of exposure to dust, gases, vapors, smoke or fumes by worker age group.

conditions. Minors without proper training or experience, working in a dangerous working environment can cause accidents and may hurt themselves and even others. But fatal work injuries involving workers less than 16 years of age were down suddenly to 5 in 2013 from 19 in 2012, getting its lowermost yearly total since the fatality census in 1992. There were 4,101 fatal work injuries amongst men in 2013 compared with 4,277 in the year 2012 (BLS, 2013). In a study done about airborne hazard exposure and the provision of airborne hazard controls in Australian workplaces shows that, workers from age 25 to 44 years had increased chances of reporting exposure to dust compared to workers 55 years or older. The following graph shows the mean duration of exposure to dust, gases, vapors, smoke or fumes by worker age group (Australian Safety and Compensation Council, 2010). Globally, the population is ageing rapidly. Moreover, between 2015 and 2050, the proportion of the world's population over 60 years will nearly double, from 12% to 22% which increases their likelihood of getting injured during work (WHO, 2009).

GENDER

Men and women work to get a good salary. Some jobs are men and some are for women. Works with hard work like in construction sites are for men. Nonetheless, house works, office works and works with less labor are for women. But in some places this is not the case. Fatal injuries between women were lower by 14 percent in 2013 to 302 from 351 in 2012 (BLS, 2013). In a study done in Australia shows, exposure level of dust, gases, vapors, smoke or fumes in male workers were exposed to airborne hazards for longer durations than females. And female workers exposed to both airborne hazards were exposed to dust for longer durations per week than male workers who were exposed to dust only. in addition, female workers exposed to both

airborne hazards had nearly the same period of exposure per week to gases, vapors, smoke or fumes as male workers who were exposed to gases, vapors, smoke or fumes only. Below shows the mean of exposure to dust, gases, vapors, smoke or fumes by gender of the workers. Moreover, women in South Asia find themselves in subordinate positions to men and are socially, culturally, and economically dependent on them. Furthermore, women are largely excluded from making decisions and from labor work (NCBI, 2004).

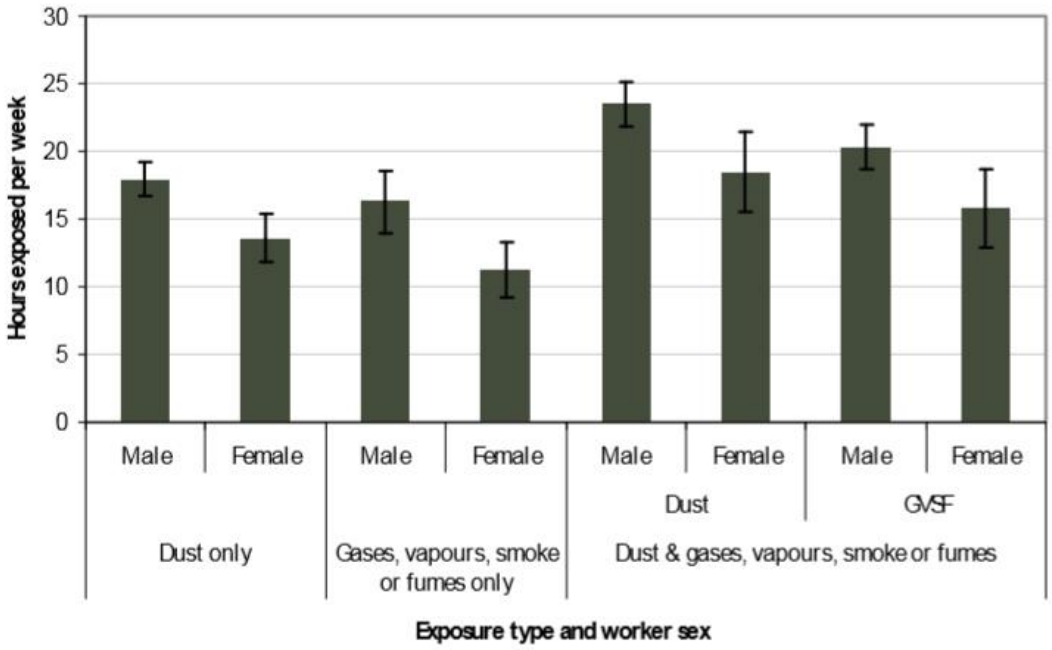

Figure 2.3 the mean of exposure to dust, gases, vapors, smoke or fumes by gender of the workers.

SOCIO ECONOMICS

Socioeconomic status including, salary, education, or occupation, is related to a number of health problems. These problems include heart disease, arthritis, diabetes, and cancer. Lower socioeconomic status of people is related to higher death rate and health problems in adulthood (E.Adler & Newman, 2008).

A randomized trial held in Canada about income for single parents who works full time in their job shows how much effect it has. They increased income in the experimental group of their study. The children of the parents in the experimental group who were between three to eight years old were later stated to have less health problems compared to the others (E.Adler & Newman, 2008).

Foreign workers are given the lowest occupations and lowest salaries, welfares and working conditions. Most foreign workers experience a penalty if reaching higher paid employment occupations like managers in United States of America (USA). South Asian foreign workers are more than 25 percentages expected to be working in the higher paid occupations. But black foreign workers are 16 percentages much more likely to be hired in the jobs with less salary (WHO, 2010).

KNOWLEDGE

Education helps the future occupational chances and earning possibility. It offers knowledge and skills that helps a better educated person to get information to promote their health. Marilyn Winkleby and her colleagues studied connection between education, occupation and income to risk factors for heart disease. After the study education was found as the important factor (E.Adler & Newman, 2008).

SAFETY PRECAUTIONS

To prevent health impacts from these hazards a number of things can be done. This includes eliminating the hazards from the machines, method of waste disposal. But completely eliminating the hazards can be difficult. And proper training is given in many work places to prevent injuries. In addition safety equipment is given to the workers to prevent fatal injuries and occupational diseases. Training of first aid and

firefighting is given to the workers in working areas around the world (WHO, Occupational health , 2008).

HEALTH IMPACTS

Globally 88% diarrheal deaths are caused by unsafe water usage, sanitation or hygiene (WHO, Mortality and burden of disease attributable to selected major risks, 2009). Worldwide, more people die from unsafe water yearly than from other causes. Worldwide unsafe water, sanitation, and hygiene cause nearly 3.1 percent of all deaths. And 3.7 percent causes disability in people. Annually 4 billion cases of diarrhea are caused because of unsafe water and this has resulted 2.2 million deaths worldwide (Ross, 2010).

Air pollutants are harmful to health. From all of these air pollutants, small particulate matter has the most effect on the health. Small particulate matter causes a number of acute and chronic illnesses. These include diseases such as lung cancer and cardiopulmonary disease. Worldwide, approximately 8% of lung cancer deaths, 5% of cardiopulmonary deaths and about 3% of respiratory infection deaths are recorded (WHO, 2009).

Exposure to lead during pregnancy reduces intelligence level. And in adults, it increases blood pressure. Due to decrease in lead usage in many countries, lead exposure has been decreased. Some people in industrialized countries are still exposed to high lead levels of lead. 98% of adults and 99% of children is affected by exposure to lead in developing countries (WHO, 2009).

About 350 000 workers face their death each year because of injuries caused in workplace. More than 90% of this injury is caused by human error and more than half of these injuries occur in the South East Asia and Western Pacific regions. In high income countries, 8% of Men aged 15 to 59 years total number of accidental injury is

caused in workplace. And around 18% of work related injuries are caused in low and middle income countries (WHO, 2009).

About 150 chemical and biological agents cause cancer. Many of these chemicals are found in the workplace. Globally, an estimated 8% of lung cancer is caused by chemical exposure. This type of cancer is the most common form of occupational cancer (WHO, 2009).

Exposure to microscopic airborne particles can cause lung cancer, chronic obstructive pulmonary disease, silicosis, asbestosis and pneumoconiosis. Exposure to airborne particulates in workplace causes 12% of deaths because of chronic obstructive pulmonary disease. Moreover, about 29 000 deaths are caused because of silicosis, asbestosis and pneumoconiosis. And this is caused by silica, asbestos and coal dust exposure (WHO, 2009). Excess noise is one of the most common health hazards in work place, especially in developing countries. Excessive noise causes irreversible hearing impairment in workers. Globally, about 16% of hearing loss in adults is caused because of noise exposure in workplace. According to the WHO 4.5 million has moderate or higher levels of hearing loss (WHO, 2009).

CHAPTER 3:

3. METHODOLOGY

3.1. Research Design

The research design is a cross sectional study and it is a quantitative study which involves the collection of data from the population of Thilafushi and analyzing the data.

Cross-sectional studies are carried out at one time point or over for a short period. They are commonly carried out to estimate the prevalence of the result of interest for a given population, in this case the population of Thilafushi. And purpose of this study is mainly for public health planning. Data can be gathered on individual characteristics, including exposure to risk factors. In this way cross-sectional studies provide an outcome and the characteristics related to this, at an exact point in time. The purpose of the study is descriptive and in the form of a survey. But the aim is to define a population or a sample within the population with an outcome and a set of risk factors (Levin, 2006).

3.2. Population and Sample

The research took place in Thilafushi which is located between Kaafu atoll's Giraavaru and Gulhifalhu of Maldives, with the whole population as the sample group. There are 70 workers in Thilafushi. This island is chosen because this is the island that the most wastes are disposed in Maldives. And the health hazards in this

island are more compared to other islands. So the health related problems will be more in this island.

The target population of this research is the population of Thilafushi. And there are 70 workers working in the island.

The whole population is selected because its 70 and it is a small number and the survey will be accurate with the whole population.

Because the target population is small, whole population is selected as the sample. In Thilafushi there are 70 workers. All the workers are selected, because it is possible and the result will be reliable and accurate.

3.3. Instrumentation

For the research instrument, a questionnaire is used. An introduction of the interviewer is mentioned at start of the questionnaire. The confidentiality is guaranteed to the worker and the ability to leave the survey or a question has been explained. 6 sections will be included in this questionnaire and in each section there are questions that are related to each section. The questionnaire has questions related to their socio demographic characteristics, safety, waste disposal, health, knowledge about health hazards and facilities. The questionnaire is able to obtain necessary information about each of these parts; hence helped to make this survey and data useful.

The research instrument “questionnaire” is pretested by using statistical software such as Epi info and SPSS. And to test this questionnaire, it is filled by foreign workers in Maldives. In addition a data analyzer checked the questionnaire, to make sure data collected from this questionnaire is able to generate statistics easily.

To increase the validity and the reliability of the survey the questionnaire is pre tested. This is done by using statistical software such as SPSS and Epi info. And to test the questionnaire, it is filled by interviewing random people from foreign countries who works in the Maldives. The data collected from the workers is trustworthy data as it is collected from the workers by interviewing them. Privacy and confidentiality is given to the workers, so the workers will answer the questions truthfully without fear. The sample size of the survey is the whole population. So this increases the accuracy of the survey, making it more valid and reliable.

3.4. Data collection Procedures

The data is collected in the field by asking questions from the questionnaire. Before the question is asked, the country of the worker is asked by the translator. And when the country is identified, questions will be asked. After each question, translator will translate the question to the particular foreign language of the worker. When the answer is given, translator will translate that answer to English so that it can be used to fill the questionnaire.

The data collected from the survey is analyzed by using software such as Epi info, SPSS (Statistical Package for the Social Sciences) and Microsoft excel. Latest version of each of this software is used.

Variable's mean, median, mode and standard deviation are found using this software. In addition, graphs and pie charts are drawn with the help of this software.

3.5. Framework for Data Analysis

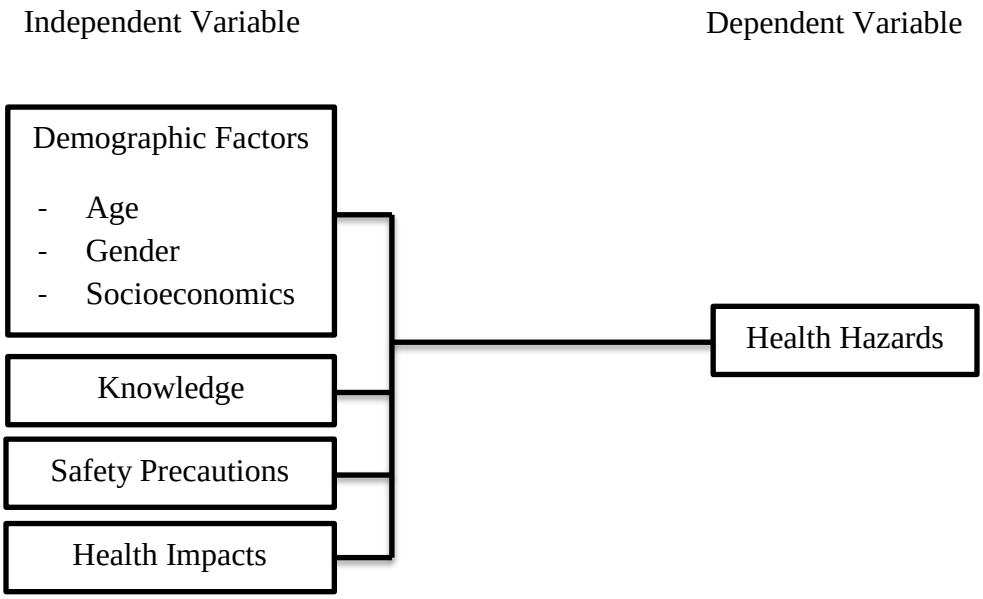

Figure 3.1 Frame work for data analysis

The dependent variable is health hazards in Thilafushi such as smoke, mosquitoes, wastes like hospital wastes and toxic wastes and more. And this is associated to the independent variables. This includes demographic factors such as knowledge, safety precautions and health impacts. In addition, knowledge, safety precautions and health impacts are involved.

3.6. Validity and Reliability

To increase the validity and the reliability of the survey the questionnaire is pre tested. This is done by using statistical software such as SPSS and Epi info. And to test the questionnaire, it is filled by interviewing random people from foreign countries who works in the Maldives. The data collected from the workers will be trustworthy data as it is collected from the workers by interviewing them. Privacy and confidentiality is given to the workers, so the workers answer the questions truthfully without fear. The sample size of the survey is the whole population. So this increases the accuracy of the survey, making it more valid and reliable.

CHAPTER 4

4. DATA ANALYSIS AND RESULTS

The results of the study are tabularized below and have been explained. Moreover, the total workers surveyed were 70 and the percentage was given as 100.

4.1. Socio demographic characteristics

Age	**Frequency (n = 70)**	**Percentage (%)**
19yrs to 30yrs	30	42.9
31yrs to 40yrs	18	25.7
41yrs to 50yrs	17	24.3
51yrs to 61yrs	5	7.1
Total	**70**	**100.0**
Mean = 34.96 minimum = 19 Maximum = 61		

Table 4.1 Age of the workers in Thilafushi

The table 4.1 shows the age group working in Thilafushi from all the 70 people surveyed. In addition, 30 (42.9%) people are of age group 19 to 30 years old. Moreover, in between 31 to 40 years, there are 18 (25.7%) people and in between 41 to 50 years, there are 17 (24.3%) people. Furthermore, there are only 5 (7.1%) people

in the age group 51 to 61 years old. Moreover the lowest age is 19 and the highest age is 61 years.

Sex	Frequency (n = 70)	Percentage (%)
Male	70	100.0
Female	0	0.0
Total	**70**	**100.0**

Table 4.2 Sex of the workers in Thilafushi

In the table 4.2 shows the gender or sex of the workers in Thilafushi from the 70 workers surveyed. In addition, there are 70 (100%) male out of those 70 surveyed.

Nationality	Frequency (n = 70)	Percentage (%)
Bangladesh	14	20.0
Indian	18	25.7
Maldivian	36	51.4
Srilanka	2	2.9
Total	**70**	**100.0**

Table 4.1 Nationality of the workers in Thilafushi

The nationality of the workers surveyed is shown in the table 4.3 above. Moreover, out of 70 people 14 (20.0%) of them are from Bangladesh. Furthermore, 18 (25.7%) people are from India and 36 (51.4%) people are from Maldives. In addition, there are only 2 (2.9%) people from Srilanka.

Level of Education	Frequency (n = 70)	Percentage (%)
None	3	4.3
Primary	18	25.7

Secondary	40	57.1
Other	9	12.9
Total	**70**	**100.0**

Table 4.2 Level of education of the workers in Thilafushi

In table 4.4 shows the level of education of the 70 people surveyed in Thilafushi. About 3 (4.3%) people does not have a level of education and 18 (25.7%) people have done up to primary level of education. Moreover, secondary education level is completed 40 (57.1%) people and other type of education has done 9 (12.9%) people.

Marital status	**Frequency (n = 70)**	**Percentage (%)**
Single	25	35.7
Married	42	60.0
Divorced	3	4.3
Total	**70**	**100.0**

Table 4.5 Marital status of the workers in Thilafushi

In the table 4.5 displays the marital status of the 70 people surveyed in Thilafushi. Moreover, 25 (35.7%) people are single and 42 (60%) out of those 70 people are married. Furthermore, only 3 (4.3%) people are divorced.

Year started working in Thilafushi	**Frequency (n = 70)**	**Percentage (%)**
1995 - 2005	12	17.1
2006 - 2010	12	17.1
2011 - 2015	46	65.8
Total	**70**	**100**

Mean = 2010 minimum = 1995

Maximum = 2015

Table 4. 6The year workers started working in Thilafushi

The table 4.6 shows the year they started working in Thilafushi. In addition, in between the year 1995 to 2005, 12 (17.1%) people and in between 2006 to 2010, 12 (17.1%) people started working in Thilafushi out of those 70 people. Moreover, 46 (65.8%) people started working in between 2011 and 2015.

4.2. General information

Suffered from an illness after started working	Frequency (n = 70)	Percentage (%)
Yes	10	14.3
No	60	85.7
Total	**70**	**100.0**

Table 4.7 Workers suffered from an illness after started working in Thilafushi

The number of people suffered from an illness after started working is shown in the table 4.7. In addition, 10 (14.3%) people suffered an illness after started working, while 60 (85.7%) people do not suffer an illness after started working in Thilafushi. Most common diseases they mentioned were common cold and acute respiratory infection.

Suffering from any chronic illness	Frequency (n = 70)	Percentage (%)
Yes	17	24.3
No	53	75.7
Total	**70**	**100.0**

Table 4.8 Workers of Thilafushi suffering from chronic illness

The number of people suffering from chronic illnesses is shown in the table 4.8. There are 17 (24.3%) people suffered from chronic illnesses while, 53 (75.7%) people do not. Those who suffer from a chronic illness said they have diabetes or heart disease such as hypertension.

Health in General	Frequency (n = 70)	Percentage (%)
Excellent	30	42.9
Good	27	38.6
Fair or Average	9	12.9
Poor	4	5.7
Total	**70**	**100.0**

Table 4.9 Health of the workers in Thilafushi in general

The table 4.9 above shows the health of the people as they describe. About 30 (42.9%) people said their health is excellent while, 27 (38.6%) people said their health is good. Moreover, 9 (12.9%) people said that their health is fair or average and only 4 (5.7%) of them said their health is poor.

Hours' work per day	Frequency (n = 70)	Percentage (%)
5 to 8	48	68.6
9 to 12	20	28.6
More than 12	2	2.9
Total	**70**	**100.0**

Table 4.10 Hours workers in Thilafushi work per day

In the table 4.10 above shows the number of hours the 70 people surveyed work per day. About 48 (68.6%) people work for 5 to 8 hours a day and 20 (28.6%) people

work for 9 to 12 hours a day. Moreover, 2 (2.9%) people work more than 12 hours per day.

Hours exposed to sunlight	Frequency (n = 70)	Percentage (%)
5 to 8	64	91.4
9 to 12	6	8.6
Total	**70**	**100.0**

Table 4.11 Hours workers in Thilafushi exposed to sunlight

The number of hours exposed to sunlight is shown in the table 4.11. Furthermore, 64 (91.4%) people is exposed to sunlight for 5 to 8 hours while, 6 (8.6%) people exposed to sunlight for 9 to 12 hours.

Hours spend handling/ disposing wastes	Frequency (n = 70)	Percentage (%)
5 to 8	64	91.4
9 to 12	6	8.6
Total	**70**	**100.0**

Table 4.12 Hours workers in Thilafushi spend handling or disposing wastes

The table 4.12 above shows the number of hours spends handling or disposing wastes by the worker. About 64 (91.4%) people spend 5 to 8 hours while, 6 (8.6%) people spend 9 to 12 hours handling or disposing wastes.

Wash hands after handling garbage	Frequency (n = 70)	Percentage (%)
Yes	68	97.1
No	2	2.9

Total	**70**	**100.0**

Table 4.13 Workers who washes hands after handling garbage

In the table 4.13 shows that 68 (97.1%) people wash their hands after handling garbage but 2 (2.9%) people does not wash their hands after handling garbage.

Wash hands before eating	**Frequency (n = 70)**	**Percentage (%)**
Yes	68	97.1
No	2	2.9
Total	**70**	**100.0**

Table 4.14 Workers who washes hands before eating

In the table 4.14 shows that 68 (97.1%) people wash their hands before eating but 2 (2.9%) people does not wash their hands before eating.

Handle toxic wastes without protection	**Frequency (n = 70)**	**Percentage (%)**
Yes	14	20.0
No	51	72.9
Sometimes	5	7.1
Total	**70**	**100.0**

Table 4.15 Workers who handles toxic wastes without protection

In the table 4.15 above shows the people who handle toxic wastes without protection. About 14 (20.0%) people said they handle toxic wastes without protection. And 51 (72.9%) people said they do not handle toxic wastes without protection. Moreover, 5 (7.1%) of people said they handle toxic waste without protection sometimes.

Visit doctor past 3months	Frequency (n = 70)	Percentage (%)
Yes	49	70.0
No	21	30.0
Total	**70**	**100.0**

Table 4.16 Workers who visit doctor past 3 months

As shown in the table 4.16 49 (70.0%) people visit a doctor for past 3 months. And 21 (30.0%) people did not visit a doctor past 3 months. This is out of the 70 people surveyed in Thilafushi. They visited doctor due to common cold and respiratory diseases such as acute respiratory infections.

Times shower a day	Frequency (n = 70)	Percentage (%)
Sometimes	3	4.3
1 to 2 times	54	77.1
More than 2 times	13	18.6
Total	**70**	**100.0**

Table 4.17 Times workers in Thilafushi shower a day

In the table 4.17 above shows how many times the people shower a day in Thilafushi out of those 70 people. Moreover, 3 (4.3%) people shower sometimes a day and 54 (77.1%) people shower 1 to 2 times per day. Furthermore, 13 (18.6%) people shower more than 2 times a day during work.

Access to proper kitchen/toilets/ bathroom facilities	Frequency (n = 70)	Percentage (%)
Yes	56	80.0
No	14	20.0

Total	**70**	**100.0**

Table 4.18 Access to proper kitchen, toilets and bathroom facilities

Above in the table 4.18 show their opinion about the access to proper kitchen, toilets and bathroom facilities. About 56 (80%) people believe that there is proper kitchen, toilets and bathroom facilities in Thilafushi but 14 (20.0%) did not agree.

Clean drinking water available	**Frequency (n = 70)**	**Percentage (%)**
Yes	67	95.7
No	3	4.3
Total	**70**	**100.0**

Table 4.19 Availability of clean drinking water

In the table 4.19 shows the availability of clean drinking water in Thilafushi. About 67 (95.7%) of people agrees that there is clean drinking water available while, 3 (4.3%) of people did not agree.

Times eat a day	**Frequency (n = 70)**	**Percentage (%)**
More than 2 times	70	100.0
Total	**70**	**100.0**

Table 4.20 Times workers eat per day in Thilafushi

In the table 4.20 above shows how many times people in Thilafushi eat a day. As shown in the table all the 70 (100.0%) people surveyed eat more than 2 times per day.

4.3. Knowledge

Might have health problems related to the	**Frequency (n =**	**Percentage**

environment working	70)	(%)
Yes	10	14.3
No	60	85.7
Total	**70**	**100.0**

Table 4.21 Workers opinion whether health problems is related to the environment or not

In the table 4.21 above shows the people who believe that if they have health problems related to the environment they are working. 10 (14.4%) people agree to this while, 60 (85.7%) people do not agree.

Health hazards and effects to health	Frequency (n = 70)	Percentage (%)
It does have effect	49	70.0
It doesn't have effect	13	18.6
I don't know	8	11.4
Total	**70**	**100.0**

Table 4.22 Health hazards and effects to the health of the wokers in Thilafushi

Above in the table 4.22 show the health hazards and effects to health of those 70 people surveyed. About 49 (70.0) people believe that it does have an effect to health while 13 (18.6%) people said it does not have an effect. Moreover, 8 (11.4%) people do not know that it has an effect or not.

In their opinion mosquitoes, smoke, toxic and other type of wastes can cause health problems in Thilafushi.

4.4. Safety

Safety Equipment	Frequency (n = 70)	Percentage (%)
Wear Helmet during work		
Yes	33	47.1
No	37	52.9
Total	**70**	**100.0**
Wear Eye goggles during work		
Yes	47	67.1
No	23	32.9
Total	**70**	**100.0**
Wear Facemask during work		
Yes	43	61.4
No	27	38.6
Total	**70**	**100.0**
Wear Gloves during work		
Yes	45	64.3
No	25	35.7
Total	**70**	**100.0**
Wear Foot wear during work		
Yes	46	65.7

No	24	34.3
Total	**70**	**100.0**
Wear Sunscreen during work		
Yes	19	27.1
No	51	72.9
Total	**70**	**100.0**
Wear Mosquito repellent during work		
Yes	6	8.6
No	64	91.4
Total	**70**	**100.0**

Table 4.23 Use of proper safety equipment by the workers of Thilafushi

As shown in the table 4.23 above the safety equipment used during work about 33 (47.1%) people wear helmets during work while, 37 (52.9%) people do not wear helmets during work. Moreover, 47 (67.1%) people wear eye goggles during work while, the rest 23 (32.9%) people do not. 43 (61.4%) people wear face masks during work while, the rest 27 (38.6%) people do not. Furthermore, 45 (64.3%) people wear gloves during work while, the rest 25 (35.7%) people do not. And 46 (65.7%) people wear foot wear during work while, the rest 24 (34.3%) people do not. Moreover, only 19 (27.1%) people wear sunscreen during work while, the rest 51 (72.9%) people do not. In addition, 6 (61.4%) people uses mosquito repellent during work while, the rest 64 (91.4%) people do not.

Company provide safety equipment	Frequency (n = 70)	Percentage (%)
Yes	55	78.6
No	9	12.9
Sometimes	6	8.6
Total	**70**	**100.0**

Table 4.24 Company provide safety equipment to the workers

As shown in the table 4.24 55 (78.6%) people said that the company provides safety equipment for work while, 9 (12.9%) said they do not. Moreover, 6 (8.6%) people said the company provides safety equipment sometimes.

First aid kit in the island	Frequency (n = 70)	Percentage (%)
Yes	57	81.4
No	13	18.6
Total	**70**	**100.0**

Table 4.25 Availability of first aid kit in Thilafushi

In table 4.25 above shows that 57 (81.4%) people knows that there is a first aid kit in Thilafushi while 13 (18.6%) of people do not know if there is a first aid kit in the island.

Anyone know first aid in the island	Frequency (n = 70)	Percentage (%)
Yes	61	87.1
No	9	12.9
Total	**70**	**100.0**

Table 4.26 Workers who knows first aid in Thilafushi

In the table 4.26 shows that 61 (87.1%) people believes that there is a person who knows first while, 9 (12.9%) of people do not know.

Health center or health care professional in the island	Frequency (n = 70)	Percentage (%)
Yes	13	18.6
No	51	72.9
I don't know	6	8.6
Total	**70**	**100.0**

Table 4.27 Health center or health care professional in Thilafushi

In the table 4.27 shows 13 (18.6%) people knows there is a health center or health care professional in the island while, 51 (72.9%) people said there is no health center or health care professional in the island. Moreover, 6 (8.6%) people said they do not know whether there is a health center or health care professional in the island or not.

4.5. Waste disposal

Waste Disposal	Frequency (n = 70)	Percentage (%)
Dispose toxic wastes		
Burning	62	88.6
Burying	8	11.4
Total	**70**	**100.0**
Dispose plastic wastes		
Burning	62	88.6
Burying	8	11.4

Total	**70**	**100.0**
Dispose food wastes		
Burning	62	88.6
Burying	8	11.4
Total	**70**	**100.0**
Dispose hospital wastes		
Burning	64	91.4
Burying	6	8.6
Total	**70**	**100.0**

Table 4.28 Waste disposal methods in Thilafushi

In the table 4.28 above shows how people dispose toxic wastes, plastic wastes, food wastes and hospital wastes. About 62 (88.6%) people said that they dispose toxic wastes by burning and the rest 8 (11.4%) people said they dispose toxic wastes by burying. Moreover, about 62 (88.6%) people said that they dispose plastic wastes by burning and the rest 8 (11.4%) people said they dispose plastic wastes by burying. Furthermore, about 62 (88.6%) people said that they dispose food wastes by burning and the rest 8 (11.4%) people said they dispose food wastes by burying. Moreover, about 64 (91.4%) people said that they dispose hospital wastes by burning and the rest 6 (8.6%) people said they dispose hospital wastes by burying.

CHAPTER 5

5. DISCUSSION AND CONCLUSION

The study is conducted by surveying 70 workers in Thilafushi. Moreover, the aim is to identify health hazards in Thilafushi and its effects to the workers. Furthermore, at the end of the study, the main health hazards identified were smoke, toxic wastes and mosquitoes. But the effect to health is minimized due to use of proper safety measures taken such as use of gloves, facemasks, sunscreen, foot wear and eye goggles. Furthermore, those do not use proper safety precaution suffer from respiratory diseases such as acute respiratory infection.

Gender

This study shows that the gender or sex of the workers in Thilafushi from the 70 workers surveyed is all male. Works such as this type of physically hard work is done mostly by men. Moreover, works with hard work like in construction sites are for men. Nonetheless, house works, office works and works with less labor are for women. In a study done in Australia shows, exposure level of dust, gases, vapors, smoke or fumes in male workers were exposed to airborne hazards for longer durations than females. As shown in this study most of the workers are male so they are exposed to dust, gases, vapors, smoke or fumes in Thilafushi during the waste disposal process.

Nationality

Moreover 14 (20.0%) of them are from Bangladesh. Furthermore, 18 (25.7%) people are from India and36 (51.4%) people are from Maldives. In addition, there are only 2 (2.9%) people from Srilanka. In this study, it is found that most of the workers are Maldivians. It is because Thilafushi is an island of Maldives and it is easy to work in near island. Moreover, most of the workers started working in 2011 and 2015. Therefore this may be due to work overload.

Safety precaution

To prevent health impacts from these hazards a number of things can be done. This includes eliminating the hazards from the machines, method of waste disposal. But completely eliminating the hazards can be difficult. And proper training is given in many work places to prevent injuries. In addition safety equipment is given to the workers to prevent fatal injuries and occupational diseases. Training of first aid and firefighting is given to the workers in working areas around the world (WHO, Occupational health , 2008). In a study done in USA shows those worker fatalities in private industry in year 2014, 874 or 20.5% were in construction sites because of improper safety precautions (OSHA, 2015). Moreover, in this study the people who uses safety precaution is known. About 33 (47.1%) people wear helmets during work while, 37 (52.9%) people do not wear helmets during work. Moreover, 47 (67.1%) people wear eye goggles during work while, the rest 23 (32.9%) people do not. 43 (61.4%) people wear face masks during work while, the rest 27 (38.6%) people do not. Furthermore, 45 (64.3%) people wear gloves during work while, the rest 25 (35.7%) people do not. And 46 (65.7%) people wear foot wear during work while, the rest 24 (34.3%) people do not. Moreover, only 19 (27.1%) people wear sunscreen

during work while, the rest 51 (72.9%) people do not. In addition, 6 (61.4%) people uses mosquito repellent during work while, the rest 64 (91.4%) people do not. Therefore, this shows only a half of the people use proper safety precaution, which could leads to injuries for those who does not take proper safety precautions.

Smoke

In the study 62 (88.6%) people said that they dispose toxic wastes by burning and the rest 8 (11.4%) people said they dispose toxic wastes by burying. Moreover, about 62 (88.6%) people said that they dispose plastic wastes by burning and the rest 8 (11.4%) people said they dispose plastic wastes by burying. Furthermore, about 62 (88.6%) people said that they dispose food wastes by burning and the rest 8 (11.4%) people said they dispose food wastes by burying. Moreover, about 64 (91.4%) people said that they dispose hospital wastes by burning and the rest 6 (8.6%) people said they dispose hospital wastes by burying. This shows that the most of wastes are disposed by burning. Therefore, this shows that smoke will be there because of burning wastes. Moreover, smoke causes air pollution which in both cities and rural areas was estimated to cause 3.7 million premature deaths worldwide in 2012 (WHO, 2014).

Illness

The number of people suffered from an illness after started working is shown in this study. In addition, 10 (14.3%) people suffered an illness after started working, while 60 (85.7%) people do not suffer an illness after started working in Thilafushi. Most common diseases they mentioned were common cold and acute respiratory infection. Furthermore, it could be because young age group is higher. In a study shows that exposed to charcoal smoke were 1.56 times more likely to develop ARI (Bautista, 2014). Moreover in this study done in Thilafushi, the workers said that the most

common health hazard that they found were smoke. Therefore they suffer from lung diseases such as acute respiratory infections. Moreover, there is a possible indication between ARI and smoke in Thilafushi. Further research will be needed to find an association. Even thought, the people who suffer from illness are only 14.3%, so most people do not suffer from the illnesses such as ARI. Therefore, even if the smoke is a hazard to health, people are safe from lung diseases such as ARI. Moreover, it could be a result of using face masks during work, which is 61.4% people wear face mask during work. This will help them to prevent the health problems related to smoke and inhalation of other hazardous gases. Moreover, the number of hours exposed to sunlight is 64 (91.4%) people for 5 to 8 hours while, 6 (8.6%) people for 9 to 12 hours. Moreover, this could lead to skin diseases. But use of safety precautions can prevent these diseases. Furthermore, people who believe that if they have health problems related to the environment they are working. 10 (14.4%) people agree to this while, 60 (85.7%) people do not agree. This shows that they are not aware of the health problems related to these hazards.

Safe drinking water

Globally 88% diarrheal deaths are caused by unsafe water usage, sanitation or hygiene (WHO, Mortality and burden of disease attributable to selected major risks, 2009). Worldwide, more people die from unsafe water yearly than from other causes. Worldwide unsafe water, sanitation, and hygiene cause nearly 3.1 percent of all deaths. And 3.7 percent causes disability in people. Annually 4 billion cases of diarrhea are caused because of unsafe water. And this has resulted 2.2 million deaths worldwide (Ross, 2010). Moreover, in the study done in Thilafushi shows the availability of clean drinking water in Thilafushi. About 95.7% of people agree that there is clean drinking water available while, 4.3% of people did not agree. So this

suggests that the people working in Thilafushi have clean drinking water and the disease caused by unsafe water usage is not there. Furthermore, the people of Thilafushi claim that they have diseases such as common cold and ARI. Therefore, diarrheal diseases are not found in the people of Thilafushi. This suggests that safe drinking water is available in Thilafushi.

Illness

Most common diseases the workers of Thilafushi mentioned were common cold and acute respiratory infection by 14.3% people. In a study done by world health organization shows that air pollutants are harmful to health and from all of these air pollutants, small particulate matter has the most effect on the health. Small particulate matter causes a number of acute and chronic illnesses. These include diseases such as lung cancer and cardiopulmonary disease. Worldwide, approximately 8% of lung cancer deaths, 5% of cardiopulmonary deaths and about 3% of respiratory infection deaths are recorded (WHO, Mortality and burden of disease attributable to selected major risks, 2009). Therefore, the smoke and the small particles in the air pollutants have an effect to the health of the workers in Thilafushi. Even the number of people who suffer from these respiratory diseases may have a much more health impacts than an acute respiratory infection because; air pollutants and smoke are dangerous. Furthermore, for these 14.3% people, they suffer from these diseases because they don't use proper safety precautions. Moreover, in s study shows that, exposure to microscopic airborne particles can cause lung cancer, chronic obstructive pulmonary disease, silicosis, asbestosis and pneumoconiosis. Exposure to airborne particulates in workplace causes 12% of deaths because of chronic obstructive pulmonary disease. Moreover, about 29 000 deaths are caused because of silicosis, asbestosis and pneumoconiosis. And this is caused by silica, asbestos and coal dust exposure (WHO,

Mortality and burden of disease attributable to selected major risks, 2009). (WHO, Mortality and burden of disease attributable to selected major risks, 2009).

5.1. Limitations of the Study

Most of the workers in Thilafushi are locals. Moreover, there are foreigners and only few know Dhivehi language. So collecting data is difficult. Therefore a translator is needed. Someone who knows these languages are difficult to find. There are foreigners from different countries and two to three translators is hired to do the job. Moreover, the foreigners might be afraid to answer the questions truthfully because they might think answering truthfully can make them lose their job. Moreover, time is limited because the research is done in a short period of time and the location of Thilafushi makes it difficult to conduct the research. Furthermore, new workers answering the questions make result different in the survey. Different bias could occur in the result of the survey.

5.2. Conclusion

This study provides insight into health hazards and the effects of these hazards to the health of the workers of Thilafushi. Thilafushi is known as the island that disposes waste mostly in Maldives, so this island has many health hazards. The aim of this study is to find the health hazards the workers face in Thilafushi and the effects of these hazards to the health. Most of the workers don't use safety precautions. So they must have many health problems due to these hazards and their behavior in safety precaution. This study will help to understand the health hazards in Thilafushi and its effects to the workers at the end. The relation between ages, gender socio economic factors, health impacts and safety precaution related to the health hazards will be included. Research question is to find the health hazards in Thilafushi and its effect to

the health of the workers. Quantitative technique will be used to find out the health hazards and its effect on health. The whole population that is 70 workers was taken as sample group. Study includes development of questionnaire and selection of sample. The questionnaire contains six sections. The questionnaire has questions related to their personal information, safety, waste disposal, health, knowledge about health hazards and facilities. After collecting the data, the data is analyzed by the help of statistical software. Ethics is considered by many ways including the consent form and by ensuring the confidentiality to the participants. The conceptual framework in this study is derived from health belief model. Moreover, at the end of the study, the main health hazards identified were smoke, toxic wastes and mosquitoes. But the effect to health is minimized due to use of proper safety measures taken such as use of gloves, facemasks, sunscreen, foot wear and eye goggles. Furthermore, those do not use proper safety precaution suffer from respiratory diseases such as acute respiratory infection.

CHAPTER 6

6. RECOMMENDATION

The study done found that in Thilafushi, there are many health hazards such as smoke, toxic wastes and mosquitoes. But the smoke is defined as the most dangerous cause because most of the workers who got ill are due to smoke which causes respiratory problems such as acute respiratory infection. Therefore, those who do not use proper safety precaution suffer from these conditions.

The workers in Thilafushi believe that the hazards in Thilafushi do not have an effect on health. But some of the workers take safety precautions. Therefore, information can be given to the workers about safety precautions and its importance because those workers who do not use proper safety precaution can understand the importance and improve the use of safety equipment. Moreover, the company can provide safety items for their protection and guide the workers how to use the safety equipment properly. Therefore, those few workers suffering from illnesses can be prevented suffering from the illnesses in the future by taking proper safety precautions.

CHAPTER 7

7. REFERENCES

Australian Safety and Compensation Council. (2010). National Hazard Exposure Worker Surveillance. *Safe work australia*, 23.

The Farlex medical dictionary. (2013). Retrieved October 2014, from The medical dictionary: http://medical-dictionary.thefreedictionary.com

(2015). *Ministry of Health.* Ministry of Health.

Bautista, L. E. (2014). Indoor Charcoal Smoke and Acute Respiratory Infections in Young Children in the Dominican Republic. *Oxford journal*.

BLS. (2013). *NATIONAL CENSUS OF FATAL OCCUPATIONAL INJURIES IN 2013.*

E.Adler, N., & Newman, K. (2008). *Socioeconomic Disparities In Health: Pathways And Policies* .

government, A. (2010). *Ethical Considerations*. Retrieved 2015, from Australian government: http://www.alrc.gov.au/publications/6-ethical-considerations/what-are-ethical-considerations

health, M. c. (2010). *Cross-Sectional Study/ Prevalence Study*. Retrieved 2015, from Michigan center for public health: https://practice.sph.umich.edu/micphp/epicentral/cross_sectional.php

Investopedia. (2015). *Demographics*. Retrieved 2015, from Investopedia: http://www.investopedia.com/terms/d/demographics.asp

Levin, K. A. (2006). *Evidence-Based Dentistry*. Retrieved October 2014, from EBD: http://www.nature.com/ebd/journal/v7/n1/full/6400375a.html

NCBI. (2004). *Role of gender in health disparity: the South Asian context*. Retrieved 2015, from NCBI: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC383384/

OSHA. (2015). *Occupational Safety & Health Administration.* U.S. Department of Labor.

Rachel, & Dylan. (2012). *Thilafushi - The "Rubbish Island"*. Retrieved October 2014, from Atlas Obscura: file:///C:/Users/Adam%20Suhail/Desktop/Thilafushi/Thilafushi%20-%20The%20%20Rubbish%20Island%20%20%20%20Atlas%20Obscura.htm

Ross, N. (2010). *WORLD WATER QUALITY FACTS AND STATISTICS.*

University of Twente. (2014). *University of Twente*. Retrieved October 2014, from http://www.utwente.nl/cw/theorieenoverzicht/theory%20clusters/health%20communication/health_belief_model/

university, N. s. (2014). Health hazard. *Environmental health and safety*.

WHO. (2008). *Occupational health* .

WHO. (2009). Mortality and burden of disease attributable to selected major risks. *GLOBAL HEALTH RISKS*, 23.

WHO. (2009). Mortality and burden of disease attributable to selected major risks. *GLOBAL HEALTH RISKS*.

WHO. (2010). *Environment and health risks.*

WHO. (2014). *Media centre.* World health Oraganization.

CHAPTER 8

8. APPENDICES

8.1. APPENDICE A: Questionnaire

Participant's information sheet

Dear Participant,

I am a student of faculty of health sciences, Maldives National University and I am doing my Bachelor degree on Primary Health Care. As a part of my degree course, I have to submit research project by selecting a problem for the study purpose. Hence, I have chosen research topic health hazard and my research tittle was "health hazards and the effects of these hazards to the health of the workers of Thilafushi, Maldives". In this study 70 people from Thilafushi was selected.

The main aim of this study is to find the health hazards the workers face in Thilafushi and the effects of these hazards to the health. There will be no risks to you even if you participate in this research. I would like you to fill a questionnaire and your contribution in this study is voluntary. The answers which you're giving are unnamed and keep as confidential. Information will be utilized only for academic purpose only and it is will not be published. You have right to withdraw your questionnaire at any time without any prior notice.

If you prefer not to participate in this study, you don't have to justify and tell the reasons. Your valuable time for spending by filling questionnaire will be help to

understand the present situation on Hepatitis B in the health hazards in Thilafushi and its effects.

If you have any question about any part of this study your most welcome to ask.

Thank You.

Student name: Adam Suhail

Phone no: +960 7451720

Email address: suhail42457@gmail.com

Informed Consent Form

I, below signed person, confirm that I understood information about the survey which has provided the participant information sheet. I have been given opportunity to ask question about the project and my participation without any burdens. I choose voluntarily to participate in this survey without any force. If I want, I can withdraw my questionnaire at any time without any prior notice. If I prefer not to participate in this study, I don't have to justify and tell the reasons for not participating. The answers which I am giving are unnamed and keep as confidential and use of data in this research has been explained to me properly.

Please tick (✓) below if you wish to participate or decline to do so:

I wish to participate in the study ☐

I do not wish to participate in this study ☐

Name of the participant: …….

Signature of participant: ……..

Phone number: ……...

Thank You

Questionnaire

I am a student from faculty of health sciences, Maldives national university. This is a survey to find the health hazards in Thilafushi and its effects on health of the workers. All the information collected through the questionnaire will be confidential and will be used in research purpose. If you feel uncomfortable answering any question, feel free to say so.

Questions			
Part A	Socio demographic characteristics		
Date of birth			
Sex		Male	
		Female	
Nationality			
Level of education		None	
		Primary	
		Secondary	
		Other	
Marital status		Single	
		Married	
		Divorced	
		Widowed	
When did you start working in Thilafushi			
Part B	General information		
Have you suffered from an illness after you started working here?		Yes	
		No	

Are you suffering from any chronic illness?	Yes	
	No	
In general, would you say your health is?	Excellent	
	Good	
	Fair or average	
	Poor	
How many hours do you work per day?	5 to 8	
	9 to 12	
	More than 12	
How many hours do you get exposed to sunlight?	5 to 8	
	9 to 12	
How many hours do you spend handling/ disposing wastes	5 to 8	
	9 to 12	
	More than 12	
Do you wash your hands after handling garbage?	Yes	
	No	
	Sometimes	
Do you wash your hands before eating?	Yes	
	No	
	Sometimes	
Do you handle toxic wastes without protection?	Yes	
	No	
	Sometimes	
Did you visit a doctor past 3months?	Yes	

	No	
How many times do you shower a day?	Never	
	Sometimes	
	1 to 2 times	
	More than 2 times	
Do you have access to proper kitchen/toilets/ bathroom facilities?	Yes	
	No	
	Specify	
Is clean drinking water available	Yes	
	No	
How many times do you eat a day?	Never	
	Sometimes	
	1 to 2 times	
	More than 2 times	
Part C	Knowledge	
Do you think you might have health problems related to the environment you are working?	Yes	
	No	
	If yes please specify	
What do you know about health hazards and effects to your health?	It does have effect	
	It doesn't have effect	
	I don't know	
	If does please specify	

In your opinion what can cause health problems (in this environment)?			
Part D	Safety		
Do you wear any of the safety equipment mentioned below during work? please tick		Helmet	
		Eye goggles	
		Facemask	
		Gloves	
		Foot wear	
		Sunscreen	
		Mosquito repellent	
		If any other please specify	
Does your company provide you safety equipment?		Yes	
		No	
		Sometimes	
Do you have first aid kit in the island?		Yes	
		No	
		I don't know	
Does anyone know first aid in the island?		Yes	
		No	
Is there any health center or health care professional in the island		I don't know	
		Yes	
		No	

		I don’t know	
Part E	Waste disposal		
How do you dispose toxic waste		Burning	
		Burying	
		Other	
		Specify	
How do you dispose plastic wastes?		Burning	
		Burying	
		Other	
		Specify	
How do you dispose food wastes		Burning	
		Burying	
		Other	
		Specify	
How do you dispose hospital wastes?		Burning	
		Burying	
		Other	
		Specify	
Comments			

8.2. APPENDIX B: WORK PLAN

Year	2015											
Month	September				October				November			
Activities / Weeks	1	2	3	4	1	2	3	4	1	2	3	4
planning the survey	■											
Hiring Staffs	■											
Collecting equipments and items		■										
Devolopment of questionnaire		■	■									
Questionnaire pretesting				■								
Collection of data				■	■	■	■					
Analyzing the data							■	■				
Report writing								■	■	■		
Finalizing the report										■	■	■

8.3. APPENDIX C: BUDGET

No.	Item	Description	Quantity	Rate (MVR)	Total (MVR)
1	Project Cordinator	Accomodation and salary	3 months	450 per day	1350
2	Translator	Accomodation and salary	3 months	430 per day	1290
3	Data analyzers	Accomodation and salary	20 days	250 per day	5000
4	Data collector	Accomodation and salary	20 days	320 per day	6400
5	Admin worker	Accomodation and salary	3 months	450 per day	1350
6	Stationaries	Pen, Pencil, Eraser, Calculator. Etc.			2430
7	Laptop	Dell vostro intel core 2 Duo 4GB RAM DDR3 500GB Hard disk	1	10,000	10,000
8	Internet	Modem	1	750	750
9		Internet Charges	3	540 per month	1620
10	Questinnaire Printing	45 Questionnaire	45	10	450
11	Project Office	3 Months Rent	3	6000 per month	18000
12	Other expenses				3290
				Total	51930

8.4. APPENDIX D: MAPS