A STUDY ON THE AWARENESS REGARDING PULMONARY TUBERCULOSIS AMONG CARPET WORKERS OF PRODUCTIVE AGE GROUP (15 – 49 YEARS) IN LALITPUR DISTRICT

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APPROVAL SHEET

This research report entitled " A Study about the Awareness Regarding Pulmonary Tuberculosis Among Carpet Workers of Productive Age Group (15-49 years) in Lalitpur District" is submitted by Ms. Nirmala Rajbhandari in Partial Fulfillment of the Requirements for the Bachelor Degree in Community Nursing, has been approved and accepted by research evaluation committee of IOM Nursing, TUIOM Nursing Campus Maharajgunj.

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Abstract

The main objective of this study was to identify the awareness regarding Pulmonary Tuberculosis among carpet workers of productive age group (15 – 49 years) in Lalitpur District. A descriptive study was conducted from 2nd Baishak to 4th Jestha 2058. Data were collected from 100 respondents in different 8 carpet factories of Lalitpur with interviewed questionnaire by researcher herself. The instrument elicited information about socio demographic characteristics of respondents, environmental information and awareness (knowledge and attitude) on PTB respondents.

The finding from this research revealed that the majority of the respondents were male and their age ranged from 15 to 49 years with a mean of 25.77 years. Most of them were Hindu and living temporary residence and income range was Rs.1000-Rs.2500. Among socio demographic characteristic such as sex, and education of respondent showed no statistical significant association with awareness level on Pulmonary Tuberculosis. (X^2 = 0.11, P Value =0.74 and X^2 =0.20, P Value = 0.66)

More than half of respondents (60 percent) had high level of awareness. 75.36 percent respondents had knowledge about transmission, only 13.40 percent had knowledge about cause, more than 60 percent had knowledge about sign and symptom and 40.21 percent had knowledge about vaccination against Pulmonary Tuberculosis. 72.16 percent respondent knew about the treatment but only 45.71 percent had knowledge about correct duration of medicine, which should be continued. 85.57 percent respondents knew the treatment available place. Only 28.57 percent respondents had not knowledge about preventive measure of Pulmonary Tuberculosis and 82.47 percent respondents showed good attitude towards Pulmonary Tuberculosis patient. The result of this study can be used for setting a health education program to promote awareness level of industry workers.

ACRONYM

AIDS	: Acquire Immune Deficiency Syndrome
CWIN	: Child Workers in Nepal Concerned Center
DHO	: District Health Office
DOTS	: Direct Observe Treatment Short Course
HIV	: Human Immune deficiency Virus
HMG	: His Majesty Government
INGO	: International Non-Government Organization
IRC	: International Red Cross
NGO	: Non-Governmental Organization
NTC	: Nepal Tuberculosis Center
NTP	: Nepal Tuberculosis Programme
PHC	: Primary Health Care
PTB	: Pulmonary Tuberculosis
SAARC	: South Asian Association for Regional Cooperation
STC	: The SAARC Tuberculosis Center
TB	: Tuberculosis
WHO	: World Health Organization

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CHAPTER I

1. INTRODUCTION

1.1 Background of the Study

"Tuberculosis is a communicable disease. It has been identified as a major public health problem in the developing countries including SAARC Region. Dr. Robert Koch announced his discovery of Tuberculosis bacillus on 24th March 1882 in Berlin. Even after 50 years of the introduction of effective chemotherapy, tuberculosis still remains the single biggest killer of young people, women and children in the world.

This problem is now being further complicated by unholy association of HIV / AIDS with tuberculosis. The maximum morbidity and mortality from tuberculosis is borne the most economically productive age group (15-49 yr.) in our society"(Source: STC Newsletter 2000).

Globally nine million people develop T. B. every year. Ninety-five percent of them live in developing countries. In April 1993, the World Health Organization declared a Global TB Emergency because TB is one of the most significant diseases in the world today. One in three people in the world are infected with Tuberculosis – that is, 1.7 billion people of the entire global population (Source: Health of Nepal, 1997).

In Nepal also TB has been identified as major public health problem. Over 80,000 people have tuberculosis. Every year about 50,000 people develop tuberculosis. Nearly half of them –22,000 have infectious sputum positive tuberculosis. It is estimated that about 10,000 people die from TB every year. That is nearly 200 deaths every week, over 25 deaths every day. TB is the commonest cause of death in adult aged 15 to 49 years in Nepal. As single infectious tuberculosis case can transmit the disease to 10 to 15 people on average before it finally dies in two years if untreated; the scene of TB remains more or less static (Source: NTP of Nepal, A Clinical Manual for Nepal - Oct 1998).

Tuberculosis is one of the major public health problems in Nepal. About 45% of the total population are infected with TB, out of which 60% are in productive age group. Every year 44,000 people develop active TB, of whom 20,000 have infectious cases. These

cases are capable of spreading disease in the community (Source: STC News letter, July 2000).

Tuberculosis is a serious public health problem. Eight million deaths occur globally, out of which 95% are in developing countries. Over 30% burden of TB is in SAARC Member Countries. Tuberculosis programs have been renewed and found partially successful. HIV / AIDS epidemic is looming large, which would further increase the number of cases. In this situation there is urgent need of strengthening our National Tuberculosis Programs. SAARC TB Center has initiated the action and identified three new partners Students, Media and Industries, to strengthen our fight against Tuberculosis. The projects have been initiated with these new partners in order to create awareness about TB disease and seek co-operation from different sectors of society to defeat this enemy of mankind (Source: STC Newsletter-July 2000).

The problem of TB is more prevalent among economically poor malnourished and less educated population. Nepal facing the problem internal mobility of the population due to seeks the job people move to city and carpet factories from rural areas as migrant labored with the improved standard of living and the quality of life. The incidence of TB was at one time declining in the developed countries. But with the increase in HIV infection, it is once again in gradual rise and receiving more attention. Despite the availability of BCG vaccine and many good drugs the situation of TB has not improved much in Nepal. More and more young people of productive age group are being infected. The chief reason for this may be the quality of life, which the Nepalese haven't been able to improve. More than 40 percent are still below the poverty line. Agriculture remains to be the only occupation of more than 90 percent of the population.

There are more than four thousand villages in the beautiful Himalayan kingdom of Nepal. Because of poverty, the country has a big problem of internal mobility. Most of the productive people join a factory or go to the city for a job. Because of the growth of urbanization the village people prefer going to the city to earn money for their living. Migrants are vulnerable for pulmonary tuberculosis as well as HIV / AIDS. Because migrant put them risk through lack of access to information and health care, linguistic and cultural difficulties. A huge portion of the people are illiterate and the society being highly influenced and governed by the traditional practices, sick people prefer traditional

consultation to medical check ups and seen to be more compliant to herbal and home remedies than to allopathic treatment. This might be another major factor for no decline in TB cases.

In Nepal, carpet weaving has been a traditional occupation of people living in the Himalayan region for years. From the wool of their sheep they make different type of flooring rugs like Raadi, Pakhi, Lukuni, Galaincha as well as sweaters, jackets, socks coats, etc. But the Tibetans, brought their own weaving technique and unique designs with them when they fled Tibet in 1959 to live in the International Red Cross (IRC) and the Swiss Government in 1960, the first carpet industry in Nepal-the Jawalakhel Handicraft Center was established in Kathmandu. Similar types of industries were established in Pokhara and Chailasas, where Tebetan refugees were resettled. With in less than a decade, the small cottage industry became a very profitable export business and more and more people began investing in it. Now the carpet industry has successfully emerged as the biggest foreign exchange earning industry in the country. In 1992, it has provided employment for more than 3,00,000 people in carpet factories spread throughout the country. In fact these factories can be found in more than 23 districts of Nepal. Today, there are about 2000 carpet factories of different size, out of which about 80% are situated in the Kathmandu Valley itself (Source: Misery behind the Looms, May1993, published by CWIN).

The rapidly growing industry has given rise to problem like environmental pollution, population growth, child labor, impact on social and cultural structure, etc. But concern for the health of the laborers is no less important is evidence by the increasing number of patients flowing in to the different hospital of Kathmandu. There are a number of environmental and occupational hazards for those working in the carpet industry. Lack of a healthy environment like proper sanitation, safe and clean drinking water, nutritious food, and personal hygiene, over crowding in working place with inadequate ventilation, dampness, poor sunshine, and polluted air predispose to infectious disease like tuberculosis, pneumonia, chickenpox measles etc (Source: the Rising Nepal, Friday Supplement, Sept, 18.1992).

"A joint HMG/WHO review of the National TB Control Program (NTP) revealed that only 30% TB cases were registered under NTP of these, only 40% were cured. The

government adopted the DOTS strategy in 1995, and established pilot DOTS centers in four districts, Kailali, Nawalparasi, Parsa, and Bhaktapur in 1996. Cure rates achieved in the cohort of patients registered in these centers was above 89%. By July 2000 the program has been expanded to 165 treatment centers in 67 district by covering nearly 70% of population. The treatment success rate in DOTS centres has remained over 89% and the national treatment success rate has now been reached to nearly 80%. Nationally, over 27,000 TB patients are registered and treated each year under the NTP, and TB treatment is now available in all the 75 districts of the country.

Introduction of Directly Observed Treatment Short-course (DOTS) has reduced the deaths. Expansion of cost effective but highly successful treatment strategy of DOTS has proven its efficacy in Nepal. This will have a profound and long lasting impact in mortality and morbidity due to TB. By achieving the global targets of diagnosing 70% of new infectious cases and curing 85% of these patients would save 60,000 deaths over the next five years. High cure rate would reduce the transmission, and lead to a decline in the incidence of disease, which would ultimately help us to achieve our objectives of TB control" (Source: STC News letter, July 2000).

TB has always been present as a social problem rather than being medical alone. Its control requires greater attention in non-specific determinants of disease such as improvement in Socio-economic and educational status. People should be made aware of their nutrition, environment and personal hygiene. People need to be educated to various aspect of TB from the cause to its prevention and treatment. Then only could it be possible to reduce the burden of the disease.

1.2 Rationale of Study

Tuberculosis is one of the infectious diseases against which many effective drugs have been in use for more than four decades. BCG vaccine has been in use for its prevention for about the same time period. A great of knowledge has been acquired about the causative against of TB i.e. Mycobacterium Tuberculosis. Despite these developments the global situation of TB has not improved. It continues to be a major public health problem in developing countries, and the Mycobacterium each year than any other single infectious agent does. 75% of these deaths occurs in the economically productive (15-49 years) age group.

Various surveys in different parts of Nepal have shown that the average, risk of infection is about 2% a year. This implies that out of every 100 Nepalese 2 persons are infected with TB every year. Moreover in cities the Nepalese who get TB are from the poorest and most disadvantaged section of society. TB spread most easily in areas of High Mountain density therefore most TB patients are found in the cities and in the Terai. In Nepal, infection with TB is very common in the economically active group. About 60% of economically active people are already infected with TB (Source: Health of Nepal 1997).

The carpet industry is the highest industrial employment generator in the country and it has become particularly beneficial to the mass work force who are illiterate or who has hardly had any education background. As it has any gender discrimination, it has a specially proven and haven to the female work force.

TB spreads from one person to another in the air. When someone with infectious TB of the lungs coughs or sneezes, the bacteria that cause the disease form an aerosol, and drift around in the air. Most of the bacteria die, but another person inhales some. These go down into their lungs where they begin to grow again. The person has been infected. So the risk of TB infection is more in carpet factories because of over crowding, poor environment, lack of working space, ignorance of health care (Source: Tuberculosis in Nepal, page-8).

Breaking the barrier of ignorance would prove to be the stepping stone. TB being an infectious and a communicable disease, the person needs to be made well aware of its prevention, treatment and fate.

The National Tuberculosis Program is one of the highest priority programs among the general health services. The overall goal of the NTP is to reduce the mortality, morbidity and transmission of tuberculosis to such a level that is no longer remains a public health problem.

Recently, the NTP has realized the need of Tuberculosis awareness program in Industries. Because the employees are high risk of PTB due to lack of health awareness, illiterate, poverty, poor environment of working place, and over crowding in carpet factory. Since employees are the backbone of industries, their and their families' well being therefore is of the prime concern. SAARC TB center has established links between some the leading group of industries in Nepal to initiate the program. No study has been done in carpet factories about TB in Nepal. According to DHO, most of the pulmonary TB cases are reported from carpet factories in different DOTS center of Kathmandu Valley.

The NTC and the Government are playing vital role to stop TB by lunching TB control, treatment and awareness program in Nepal. TB control program is not enough to stop TB. Therefore awareness to people is the most important to stop TB.

All these mentioned reasons justify that carpet workers are high risk of the TB. Therefore the carpet workers need to have good knowledge about prevention and treatment of the disease. That is why this study was undertaken in the carpet factories.

1.4 Significance of the Study

This small scale study will be helpful for the health police maker, planner, administrator, educator, care provider, supervisor, evaluator as well as community leaders and community people by following ways.

- The purpose of study is to provide a foundation for future targeted community based TB education programs within the carpet factories.
- The findings of this research study are expected to be useful in providing information about the knowledge of the carpet workers on pulmonary TB, its prevention and treatment. In the process of the study, efforts are made to bring about public awareness regarding Tuberculosis.
- The report of the research study, it is expected to be useful for the health care providers in deciding the appropriate preventive, curative and rehabilitative, health services.
- This study will be helpful to researchers or interested persons in the related field.
- It will be useful for the government; NGOs and INGOs to launch related programs in the concern field.
- The carpet workers interviewees get benefit during study. After collecting data, information and education are given to related questions and queries if they are made.

1.5 Objective of the Study

1.5.1 General Objective

To assess the awareness regarding pulmonary tuberculosis among carpet workers of productive age group (15 to 49 years) in Lalitpur District

1.5.2 Specific Objectives

- To identify the existing awareness about the pulmonary tuberculosis disease and related program.
- To find out the environmental and socio-economic factor contributing to the problem.
- To provide the guidelines and recommendation to the concerned authorities and policy makers to formulate an effective control strategy measures.

1.6 Research Question

1. What is the awareness (knowledge and attitude) about PTB and related program of the carpet workers?
2. What is the socio-economic status of the carpet workers?

1.7 Hypothesis

- Male and female carpet workers are equally aware regarding PTB.
- Literate carpet workers are more aware regarding PTB than illiterate carpet workers.

1.8 Variables

1.8.1 Independent variables

- Age of respondent
- Sex
- Ethnicity
- Address
  - Temporary
  - Permanent
- Education
- Economic status
- Belief and Practice
- Knowledge about PTB
- Environment of home and working place
- Source of Information
- Available Health Services

1.8,2 Dependent variables

Awareness on pulmonary tuberculosis among carpet workers of productive age group (15 to 45 years age).

1.9 Operational Definition

Some of the words and phrases used in this study have specific meaning and implication here. The operational definition of those terms is given for the convenience of the general readers.

Awareness : Having knowledge about Pulmonary Tuberculosis and related program.

Awareness level

Zero level : who have never heard about TB or who can not give the any answers of question about PTB.

Low level : who gives right answer up to five questions about PTB

Moderate level : who gives right answers six to ten questions about PTB.

High level : who gives right answers more than ten questions about PTB.

Carpet workers	: The person who works in the carpet factory of Lalitpur district.
Carpet factory	: The factory where make the carpet.
Productive age group	: Refer to the person whose age group in 15 to 49 years.
Single	: The person who is unmarried.
Separate	: The person who is separated from husband/ wife but not divorce.
Illiterate	: The person who can not read and write.
Literate	: The person who can read and write Nepali.
1-5 grade	: The person who passed 1-5 class in school level.
6-10 grade	: The person who passed 6-10 class in school level.
Economic status	: It refers to per month income of a person.

1.10 Delimitation of the study

The following delimitation were set for the study:

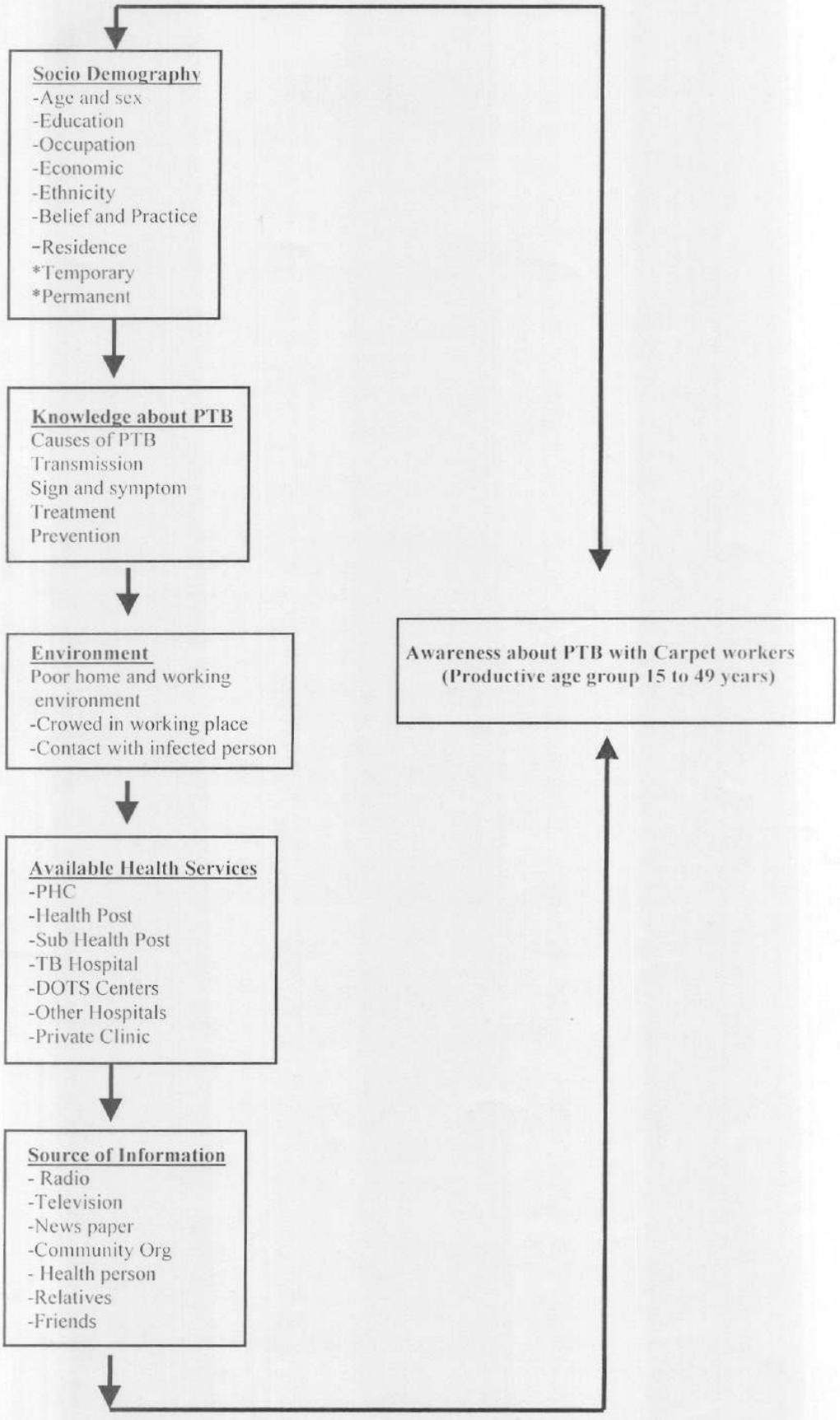
- This study was limited to the carpet workers who are working in carpet factories of Lalitpur district.
- Both sexes was included
- This study was limited to 100 clients only.
- There was no discrimination regarding caste, religion, and education of the respondents.
- Duration of the study was only five weeks.
- The respondent age group was 15-49 years.
- This study was limited to some carpet factories of Lalitpur district. So findings of this study would not be generalized.
- The questionnaire schedule was used as a research instrument.

1.11 Conceptual Frame Work

Conceptual framework consist of interrelated obstruct general concept that the egret those concepts in to meaningful configuration concepts describes mental image of phenomena. The investigator developed a conceptual framework to describe her study, which define clearly the area of study.

Most of the people have no knowledge about PTB that leads to spread TB with people in large scale. It is due to socio demographic, economic condition, availability of health services, education etc. Therefore the investigator studied to find out the awareness regarding Pulmonary Tuberculosis among carpet workers of productive age group (15 to 49 years) in Lalitpur District, according to the age of respondent, sex, ethnicity, address (temporary, permanent), education, economic status, belief and practice knowledge about PTB, environment of home and working place, source of information and available health services

CONCEPTUAL FRAME WORK



CHAPTER II

2.1. Literature Review

Review of literature was done through out research study that was undertaken to gain insight in to problem selected for study. Review of literature for this study has been done from the time of selecting problem, writing proposal, developing instrumentation as well as application of method for this study etc.

The literatures were used from many sources such as Journals, Articles, Reports, Periodic Magazines, Books and Abstract of MEDLINE, POBLINE from Internet search. Some literatures are presented here.

Introduction of carpet factory

CIWN (1993) stated that "The art of weaving carpet is as old as civilization. It was introduced in India in the 16th century by the Mughal emperors. During the reign of Akbarand Sahajahan, imperial carpet factories were established in Agra, Delhi and Lahore (Pakistan). In Nepal, carpet weaving has been a traditional occupation of people living in the Himalayan region for years. From the wool of their sheep they make different types of flooring rug loke Raadi, Pakhi, Lukunin, Galaincha as well as sweaters, jackets, socks coats, etc. But the Tibetan brought their own weaving technique and unique design with them when they fled Tibet in 1959 to live in the various areas of Kathmandu valley as refugees. With the help of the International Red cross (IRC) and the Swiss Government in 1960, the first carpet industry in Nepal – the Jawalkhel Handicraft Center was established in Kathmandu. Similar types of industries were established in Pokhara and Chailasas, where Tibetan refugees were resettled.

With in less than a decade, the small cottage industry became a very profitable export business and more and more people began investing in it. Now, 33 years later, the carpet industry has successfully emerged as the biggest foreign exchange earning industry in the country. In 1992, the carpet industry has provided employment for more than 3,00,000 people in carpet factories spread through out the country. In fact, these factories can be found in more than 23 districts of Nepal. Today, there are about 2000 carpet factories of different size, out of which 80% are situated in the Kathmandu Valley itself.

Carpet factories in the Kathmandu Valley are mainly concentrated in those areas where the Tibetan refugees have been settled. Boudhnath, Chabahil, Jawalakhel, Swayanbhu and Dallu areas are quite locality where carpet looms are not set up. In the beginning this industry provided job opportunities for Tibetan refugees at the Jawalakhel Handicraft Center, and now it gives employment to more than 3,00,000 people throughout the country."

About 183-carpet factory of Lalitpur district has registered in the Central Carpet Industries Association. Among them some carpet factory are already closed. Even though, approximately 7320 people are employed in these factories. The carpet workers are risk people of communicable diseases like tuberculosis. The cause behind this problem may due to lack of a healthy environment like proper sanitation, safe and clean drinking water, nutritious food and personal hygiene, similarly overcrowding in the working place in adequate ventilation, dampness poor sunshine and polluted air predisposes to infected disease like tuberculosis. For controlling and stopping the tuberculosis in carpet factory, it is necessary to aware the carpet workers about tuberculosis as well as to improve the environment of the carpet factory. Recently the NTC is starting the program for industry workers but not found any research has done on awareness regarding tuberculosis among carpet workers, So that this study is necessary to assess the level of awareness among carpet workers.[6]

Tuberculosis

AHRTAG (1996) stated that, tuberculosis is nearly always caused by infection with the Bacillus Mycobacterium Tuberculosis. TB can affect the lungs; this is pulmonary tuberculosis. The TB germs can also enter the blood stream and spread to other organs in the body. This is the extra pulmonary TB. PTB is more common in adults and in children. Extra- pulmonary tuberculosis is not infectious.[1]

Transmission of infection

Anthony H. et.al (1998) revealed that, transmission occurs by air borne spread of infectious droplets. The source of infection is a person with TB of the lung who is coughing. Tuberculosis of the lung is pulmonary tuberculosis. This person is usually

sputum smear positive. Coughing produces tiny infectious droplets (droplet nuclei). One cough can produce 3000 droplet nuclei. Transmission generally occurs indoors, where droplet nuclei can stay in the air for a long time. Ventilation removes droplet nuclei. Direct sunlight quickly kills tubercle bacillus, but they can survive in the dark for several hours. Two factors determine an individual's risk of exposure, the concentration of droplet nuclei in contaminated air and the length of time breathing that air.[2]

UNICEF (1996) stated that, TB spreads rapidly through indiscriminate spitting and coughing. Each infected person is likely to infect at least twelve others. Just one cough droplets releases over 1,00,000 germs in to the air.[20]

Beliefs

CROFTON J. et.al (1992) revealed that, local beliefs about TB and its cause obviously vary in different areas, different cultures and even different groups of the population in the same area. Religion, caste, and degree of education may influence people's ideas. In some places people believe that tuberculosis is due to evil spirits. In many cultures people think than that TB is hereditary. These ideas are not surprising. Yet, tuberculosis is an infectious disease.[5]

Risk of infection

Anthony H et.al (1998) stated that an individual's risk of infection depends on extent of exposure to droplet nuclei and susceptibility to infection. The risk of infection of a susceptible individual is therefore high with close, prolonged, indoor exposure to a person with sputum smear – positive PTB. The risk of transmission of infection from a person with sputum smear negative PTB is low and with extra pulmonary TB is even lower.[2]

Brunner and Siddhartha (1988) stated that, Adult is the main source of TB infection in the community. Active PTB is the only form of the disease that is infectious and spreads from person to person via the air. The lung of a person with active pulmonary disease may develop curatives that are full of TB germs. When the person coughs or sneezes, large numbers of TB germs from the lungs are sprayed into the air is tiny droplets.

Family, friends, colleagues and health workers who have close contact with same one who has infections TB are at the greatest risk.[4]

Have TB will travel

Dixit K. et.al (1998) stated that, Migrants are particularly vulnerable populations. Often they are seen as a threat, competing for scarce resources and may face conflict with the host nation's authorities. They belong to the poorest sections of society and have a tenuous existence wherever they are. They inhabit the poorer, overcrowded areas of cities such as slums or squatter camps, where access to all kinds of facilities, including health care, may be limited. Their living conditions, nature of employment, place them at risk of many health problems, slums and squatter camps are ideas breeding grounds for a host of communicable diseases, especially TB.

The migrant lives alongside the poorest section of the host nation, suffering the same problems as this group. However as rarely are they granted even the basic right as nationals, their suffering is exacerbated. The jobs that they are offered often are the most dangerous and lowest paid. Psychological stress on the migrant is great and may increase the risk of health problem. Women and girls are at risk of being lured or forced into sun work or may have ban specifically trafficked for this purpose.[7]

Social disease

K. Park (1994) stated that tuberculosis is social disease with medical aspects. It has also been described as a barometer of social welfare. The social factors include many non-medical factors such as quality of life, poor housing and over crowding, population explosion, smoking, drinking, under nutrition, lack of education, large families, early marriage, lack of awareness of causes of illness etc. All these factors are interrelated and contribute to the occurrence and spread of tuberculosis.[9]

Shakya T. (1994) presented that, most of the TB patients are being diagnosed or treated by private doctors, patients initially prefer private treatment, as they perceive it as better. Later they may switch on to NPT regimen. Such mixing of different regimens may increase failure rate.[14]

WHO (1997) stated that, The social and economic consequences of TB for individual and for society as a whole are enormous in terms of human suffering, economic loss and decreased productivity. Rapid industrialization and urbanization have given rise to distinct peri-urban areas with overcrowding and poor sanitation. Their conditions have increased the treatment of TB.[21]

Shakya T. (1993) stated that, Awareness among people about the disease is the first step for the success of TB control. It should be to inject awareness among the people about the problem brought by the disease and various aspects of Tuberculosis control for that is common symptomatology, infectious nature, advantages of early diagnosis and complete treatment. [15]

Shakya T. (1978) presented that; Prevention is not only better than cure but also cheaper. The control measures of TB must take into account social, economic and educational aspects, its early symptoms and methods of early diagnosis and treatment and these methods of diagnosis and treatment and these methods of prevention must be known to every man, woman and child. They must also know that tuberculosis is infectious not hereditary and that it can be cured if properly treated.[16]

Dr. Vaidya B. and Tuladhar S. (1992) stated that, "A noticeable number of the carpet factory workers were increasingly attending Teku infectious Diseases Hospital with each passing day. This became a source of prime concern for the doctors attending to them and a study was carried out on the workers who attended Teku Hospital from2049 Baisakh to Asar. The results were significant and should be a cause for concern for all those involved in the carpet industry as well as in health care.

During the three months survey period, a total of 2050 people attended the hospital as out patients, and 18.3% of them were from the carpet industry. Similarly out of a total of 3173 patients admitted during the period. 23.8% were carpet factory workers. Thus it was evident that the carpet industry was the single most important occupation group attending the hospital, taking up nearly 25% of the beds for admission.

The age of the carpet factory workers varied from, believe it or not, 5 years to 76 years. However, the majority of them (more than 50%) was teenagers, about 35% between the age of 20 to 30, and about 8% were above the age of 30 years. Significantly, approximately 12% of the total number of patient were below 14 years of age. The sex ratio was almost equal, with a slight preponderance of males. Most of the workers belonged to the Tamang, Rai, Gurung, Lama, Magar, and castes from different part of Nepal, having coming to Kathmandu only recently to work in the carpet factory. Brahman, Chhetri and Newar were seen less frequently amongst them.

The single most important disease afflicting carpet workers was gastroenteritis, as 60% of out patient and 90% of those admitted came with complaints of diarrhea and vomiting, many severely dehydrated and in the stage of shock. The other common diseases were typhoid fever, chest infection and pneumonia, infective hepatitis with jaundice, meningitis, measles, chickenpox, tuberculosis and also Titanus.

While we are not becoming acutely aware of the problems the carpet industries have created in the valley, we have not yet been able to see how the industry is adversely affecting the workers themselves. That many of them are commonly afflicted with infectious diseases is an indicator of the poor working and living conditions in the industries which is the largest foreign revenue earner in Nepal.

There are a number of environmental and occupational hazards for those working in the carpet industries. Lack of a healthy environment like proper sanitation, safe and clean drinking water, nutritious food and personal hygiene are responsible for the developing gastroenteritis, typhoid, and hepatitis and worm infestations. Similarly overcrowding in the working place in adequate ventilation, dampness poor sunshine and polluted air predisposes to infected disease like tuberculosis, pneumonia chickenpox, measles etc.

Although the poor health situation in the carpet industry is a growing problem, it is most unfortunate that neither the carpet manufacturers nor the authorities have seriously shown any concern for the health of the carpet workers. It is also necessary that the government implement laws to provide basic health care to the workers, like proper sanitation, safe drinking water, proper ventilation and lighting periodical medical checkup, provision of health education, medical insurance and medical benefits. A concerted effort is required

from all quarters concerned in other to control growing menace, which is afflicting the carpet industries".[8]

Thilakavathi S. et al (1999) has done a study on knowledge of TB was undertaken in South Indian Rural Community to assess the initial level of knowledge of TB and again after providing health education on TB, to evaluate the effectiveness of health education, after 2years. A total of 466 respondents from 24 randomly selected villages in sriperunpuder taluk, Tamilnadu were interviewed. The community was then educated about the important aspects of TB by means of pamphlets, film shown exhibition, role-plays and group discussions. After 2 years, the respondents were revisited and interviewed using the same interview schedule. There was an overall increase of knowledge on various aspects of TB ranging from 18% to 58%.[19]

Singla N. et.al (1998) has done study on awareness about Tuberculosis among Nurses working in a TB Hospital and a general Hospital in Delhi. They were served a pre-tasted questionnaire to 213 nurses of the LRS Institute of TB and allied Diseases and those in a general hospital. A substantial number of nurses in either hospital had inadequate awareness about TB. If 75% corresponds is made the cut-off point for judging adequate knowledge, then 40.2% of TB nurses and 10.7% of general hospital nurses qualified for being aware. Age of the respondent and year of experience had no relation to the level of awareness.[17]

Gender

Smith Ian (1996) revealed that, In Nepal, as in most countries of the world, the reported incidence of tuberculosis (TB) is higher in men than women. This apparent discrepancy may be explained by a combination of three simple possibilities; either woman doesn't get the disease, don't get treatment, or get treatment outside the formal health system. However, this simple classification masks complex situation. Gender inequalities in tuberculosis control are likely to involve many diverse issues, including susceptibility to infection and disease, health beliefs, cultural values and customs, access to education, health education strategies, and access to health services.

As international concern for equity in health and health care has grown, so too has the awareness that gender plays an important role in determining level of health, along with aspect of socioeconomic status, age, race, and geography. Although women in Nepal have higher reported morbidity than men, they differ from women in most other developed countries in having a shorter life expectancy, and lower than expected use of health service. Only one other country in the world, Bangladesh, shares this features if lower life expectancy in women than men. This feature is explain partly by the high maternal mortality rate of 830 per 100,000 live births but is due to the excess female U5MR found throughout the Indian sub-continent.

Several factors influence risk of exposure, including migration and social activities. Although rates of migration are greater for women than men, most female migration is for marriage, and is intra-rural. Migration in men is more usually for service, agriculture or in search a job. This takes them to urban centers, where the risk of infection is higher. Communal living and group activities increase the opportunity for transmission of TB. Gender differences in frequency and duration of social contact therefore influence the prevalence of infection in men and women. The high rate of infection in the Indian army was attributed to the greater opportunities for infection in camps and barracks, as compared with isolated rural Nepali villages.[18]

Occupational Risk

Rosenman, K.D and Hall N (1996) published that "They sought to assess whether there is an increased risk of tuberculosis among individual who work in certain industries or occupations. A case-referent study of 149 male tuberculosis (TB) patients reported to the New Jersey Health Department from 1985 to 1987 and 290 referents was performed. Standardized interviews were conducted via the telephone of in person. Increased risk of TB was highest in heavy drinkers (OR=3.33,59% CL 1.99-5.59) and those who had a history of living with someone who had a history of TB (OR = 10.92, 95% CL 4.92-24.22). Occupations and industries associated with elevated risk for TB included, " four silica- using industries-quarrying (OR = 3.96, 95% CL 0.36-44.02). Ship and boat, building and repair (OR=2.10, 95% CL 1.08-4.10), light truck drivers (OR = 2.49, 95% CL 0.82-6.50), eating and drinking establishments (OR =2.83, 95% CL 1.11-7.20), and janitors / cleaners (OR = 2.00, 95% CL 0.63-6.31). Except for janitors /cleaners, these

elevated adds ratios remained for the above occupations/industries after controlling for alcohol or a history of having lived with some one with tuberculosis. Limitations of the study included a poor response rate (3890) and the exclusion of women from the study.[13]

Marinac J. et.al (1998) revealed that, completed surveys were available from 505 subject, 342 females and 162 males. Most (97%) of the subject were African Americans, with 57% between the ages of 21-40. Over two-thirds were high school graduates, & 77% reported an estimated total household annual income of < $20,000. Self-perceived knowledge about TB was rated as little or nothing by 60% of respondents. The overall correct response score was 61% with 55% correct response to queries related to etiology, 53% of identification of high-risk population, 57% for possible routes of transmission, 89% for symptoms, and 49% for treatment. Male, those with annual incomes > $20,000, and individual 51-70 years old had the highest scores. In this high-risk inner-city population surveyed, knowledge deficits in the etiology transmission, and treatment of TB were identified.[11]

Conclusion: The results of this survey indicate that educational efforts directed at the etiology, transmission and treatment of TB are needed in this targeted high-risk population. Participants as their preference for information sources identified the health department, TV and the workplace. These findings will be used in the next phase of our efforts to develop educational programs directed at reducing the incidence of active TB cases and increasing preventive intervention.

Bhat S. et.al (1999) revealed that only 9% of the patients knew correctly the cause of PTB. Knowledge about mode of spread of the disease was not known to 49% of patients. Awareness regarding the investigations like chest X-ray and sputum examination was high as 70% but utility of sputum examination was known to only 29% of the patients. Awareness of harmful sequelae of inadequate and incomplete treatment was as high as 93% but knowledge per se of adequate duration of treatment was poor in a half (50%) of the subjects. Attitude towards domiciliary treatment was generally positive (88%) Practices regarding safe sputum disposal and preventive measures practiced in the families were poor in nearly two thirds of patients. Health education efforts need to be strengthened to create better awareness of these important aspects of tuberculosis diagnosis, treatment and control.[3]

London L. (1987) stated that, tuberculosis remains a serious public health problem in South Africa. Current control policy in industry relies on passive case-finding and regards industrial workers as at low risk. Analysis of tuberculosis among a canning factory population in the Boland demonstrated high rates of pulmonary tuberculosis, comparable to the high rates in the community, and an absence of the 'healthy worker effect'. Black men were at particular risk. An argument is made for a review of current practices in tuberculosis control based on a sound knowledge of risk profile for particular industries.[10]

"Pun Khagi Maya (2054 BS) has done a study on family member's knowledge on treatment and prevention of pulmonary Tuberculosis in NTC, Sanothimi." The findings of the study show that almost all of the family members were familiar with PTB. 80% of family members had correct knowledge regarding the nature of the disease. The correctly stated that it is a communicable disease. 52.38 percent of the respondents believe that smoking and drinking alcohol cause PTB. This in fact is a misconception, which is still prevalent to a large extent. PTB is an infectious disease caused by bacteria. As many as 32.14% of the respondents correctly recognized cough more than three weeks to be one of the major symptoms of TB, only 36.77% of the respondents correctly answered about mode of transmission of pulmonary TB. They said that it spread by coughing and sneezing.

Knowledge about treatment of PTB is very poor. Majority of the family members is still unaware about free supply of TB drugs from Sanothimi and the donation of treatment. For prevention of transmission of PTB 94% of respondents emphasized on covering mouth with a hanker chief while coughing and sneezing. But many don't care much on sputum disposal system because 42% threw their patient's sputum anywhere in their surrounding.

In conclusion, though the family members know much about that prevention and treatment of PTB they are negligent in their practice. It may be due to long duration of treatment that has to be taken. So, tuberculosis has not been successfully controlled and the rate of PTB in developing countries is still increasing rapidly.[12]

2. 2. Summary of the literature

Tuberculosis a leading cause of morbidity and morality in developing countries. It is caused by mycobacterium tuberculosis but some people still believe that it is due to evil spirit poor housing, over crowding, under nutrition, smoking and drink alcohol are the contributing for occurrence and spread of tuberculosis. Poor housing and poor ventilation are the best reservoirs of TB organism. It is easily transmitted from one person to another via the air during coughing, sneezing and indiscriminate splitting.

Migrants are particularly vulnerable population. They belong to the poorest sections of society. Their living conditions and nature of employment place them at risk of many health problems. Most of the migrant people are working in carpet factory. The carpet factory is one of the biggest industries of Nepal, but there are a number of environmental and occupational hazards for these working in the carpet industries. For this reason the carpet workers are risk from communicable disease like Tuberculosis.

The incidence of tuberculosis is higher in men than female and the incidence of TB is more in productive age group.

People should know about TB symptoms and that it is treatable. People's attitude, knowledge and beliefs about TB also affect in seeking treatment and prevention. Various studies have shown that most of the people are not aware about TB it may cause due to ignorance and lack of education. Tuberculosis there is an urgent need to inject awareness among the people through mass health education programs.

CHAPTER III

3. Research Methodology

The researcher used descriptive and exploratory research design in the study. The study was conducted over a period of five weeks from the time of commencement. See figure 1 (Study implementation plan). The methodology that was adopted for this study is presented here with a brief description.

3.1 Source of data

There are 183 carpet factories in Lalitpur District and approximately 7320 people are employed. Among them, eight selected carpet industries were included in this research study where 320 people are working. Among them 31.25% of total carpet workers were included in this research i.e. 100 respondents.

The primary data was collected and used in this study. Using interview schedule was collected primary data from carpet workers.

3.2 Sampling procedure

In order to fulfil the objectives stated above, this study was covered eight-carpet factories, which were already selected. 31.25 percent carpet workers were taken of total carpet workers of Lalitpur through simple random sampling procedure as sample in the study, using lottery method, i.e. total 100 respondents were chosen as sample for the study purpose among eight-carpet factory of Lalitpur. The researcher was an included respondent with out any discrimination all caste and sex included in this study that is the productive age group (15-49 years).

3.3 Instrument and Tools

The survey instrument for data collection was interview schedule. Open questionnaire and close questionnaire were used in interview schedule. The questionnaire consisted of three major section i.e. socio- demographic information, environmental data and awareness about the pulmonary tuberculosis. Different types of books, related research papers, survey report, magazines, proposals, reports of NGOs / INGOs and government strategy had been studied and analyzed to guide the researcher in construction of survey tools.

Ten percent interview schedule of total sample respondents were trial tested in carpet factory of Kathmandu to identify the practicability and determine validity and objectivity.

The research tools revised and finalized on the basis of result obtained from the trial test and the advisor as well as other related experts made suggestions. The model of interview schedule is given in the appendix.

3.3.1 Instrument validity and reliability

- To ensure content validity the instrument had given to the concerned teacher and expert medical professionals. According to their suggestions some modifications was made.
- To maintain reliability, 10% interview schedule of total sample respondents had been pre- tested in carpet factory Kapan, Kathmandu in similar setting before the actual survey and necessary changes had incorporated in questionnaire afterwards.

3.4 Data collecting procedure

First of all, the researcher had met the responsible person of the Carpet Factory. The researcher informed the purpose of the study and had taken verbal consent from factory owner. Then the researcher had gone to the selected carpet factory in Lalitpur District and talked with carpet workers about purpose of study and randomly selected the respondent by lottery method. After taking verbal consent she filled the interview schedule herself, making the favorable situation. The researcher had stimulated the respondents to share information without any hesitation. The researcher obtained the necessary data and information through conversation in a friendly manner. Researcher had selected the next random number instead of those who did not want to participate in the study.

3.5 Measure to reduce bias

To minimize bias ness interview schedule had been prepared in an orderly manner by avoiding clues. Hundred subjects had been included without any discrimination. Collecting all data with a great care was minimized subjective bias-ness by the investigator herself.

3.6 Ethical consideration

- The named study investigators assume overall responsibility for the ethical conduct and administration of the study.
- The permission had been taken from carpet owner before conduct research.
- The identity of the participants was protected at all time during and after the study.
- Participants were informed about the nature of the study and the extent of their involvement prior to giving verbal informed consent to participate.
- Privacy was maintained, as far as possible, during data collection.

3.7 Data Analysis and Interpretation

All the completed questionnaires were re-checked by the researcher in the field. All the obtained data were processed and analyzed with the help of a master chart and computer. Description and simple mathematical interpretation procedure was adopted in this study. The data and description information was analyzed according to percentage. Analyze the association between socio demographic characteristic and awareness level on PTB of respondent by Chi-square test. The researcher used tables, figures and numerical percentage in the process of analysis and interpretation of the result.

Study Implementation Plan

(Table duration 5 weeks)

S.N.	Activities	1	2	3	4	5	Remarks
1	Literature Review						
2	Proposal writing						
3	Developing Questionnaire						
4	Pre-testing and questionnaire finalization						
5	Data collection						
6	Data Analysis and interpretation						
7	Report writing and presentation						

CHAPTER IV

4. RESULTS OF THE STUDY

The main objectives of this study was to identify the awareness regarding Pulmonary Tuberculosis among carpet workers of productive age group (15-49 years) in Lalitpur District of Nepal.

The interview questionnaire was scheduled consisting of mainly three parts. The first part consists of information about socio-demographic and the second part consists of environmental information and third part consists of information about Pulmonary Tuberculosis.

This chapter deals the descriptive analysis and interpretation of data, which were collected from field survey in order to present the findings of the study. The analysis and interpretation of data has been presented with the help of text, tables and figures, such as table, bar graph, pie-chart, to make the presentation more clear and meaningful. The analysis and interpretation is under the following headings and subheading.

- General characteristic of respondent
- Socio economic status
- Environmental information
- Associated risk factors of PTB
- Cause behind working in carpet factory
- Health program within the factory
- Association between socio- demographic characteristic of respondent's and awareness level of PTB
- Respondent's awareness towards PTB

4.1. General Characteristics of Respondent

In this part age, sex, caste, religion, residence and marital status of respondents have been included. It is shown below in the table.

Table No 1

Number and percentage of general characteristics of the respondents

Characteristic of the respondents	Number (100)	Percentage (100)
Age		
15-24 years	47	47
25-34 years	44	44
35-44 years	8	8
45 –49years	1	1
	Mean age– 25.77 years, Min. Age 15, Max. Age 46	
Sex		
Male	57	57
Female	43	43
Caste		
Newar	21	21
Lama	36	36
Magar/Gurung /Rai/Limbu	26	26
Brahman/Chhetri	5	5
Others (Kami/Damai/Sharki)	12	12
Region		
Hindu	53	53
Buddhist	45	45
Others (Christian)	2	2
Residence		
Permanent	17	17
Temporary	83	83
Marital Status		
Married	78	78
Single	20	20
Separate	2	2

As observed in Table No 1 these general characteristics of the students, the result showed that respondent's mean age was 25.77 years, the youngest was 15 and oldest was 46 years old. 47 percent of respondents were age between 15 to 24 years, 44 percent of them were from 25 to 34 years, 8 percent were from 35-44 years and 1 percent was 45 –49years of age.

It was found that 57 percent were male and 43 percent were female. By caste 21 percent of the respondents were Newar, 36 percent were Lama, 26 percent were Magar/ Gurung/

Rai/ Limbu 5 percent were Brahman/ Chhetri and 12 percent were others that is Kami, Damai, Sarki etc.

It was found that 53 percent of the respondent were Hindu, 45 percent were Buddhist and other 2 percent were Christian. Among these respondents 17 percent had permanent address in Lalitpur and 83 percent had temporary address that came form different place of the country.

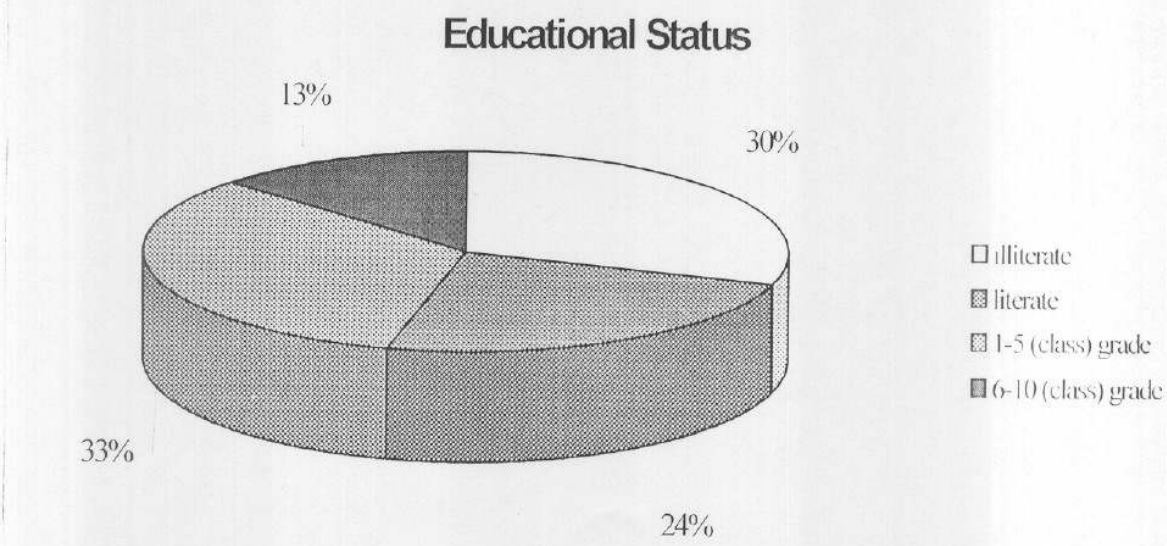
Regarding marital status, 78 percent of respondent were married, 20 percent of them were single and rest of 2 percent was separate.

4.2 Socio Economic Status

In the socio economic status of respondent's factors like educational status of respondents, family structure, economic status and number of children have been studied which can be seen below in the table.

Figure No 1

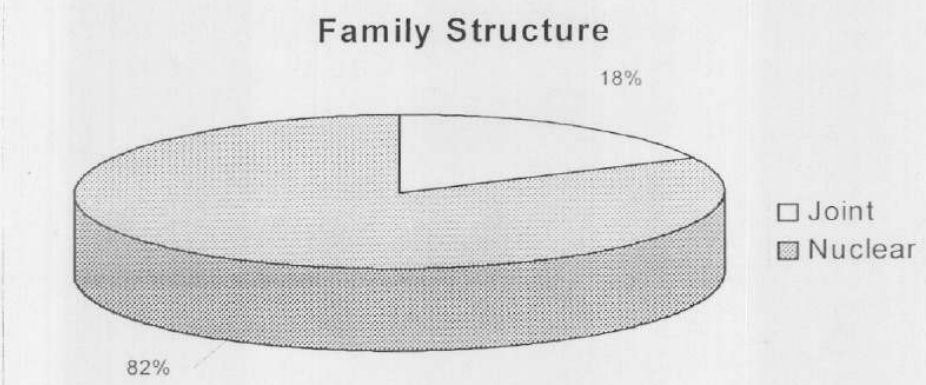
Distribution of respondents according to educational status



Regarding the educational status of respondent, the result showed that there were 30 percent of them were illiterate, 24 percent were literate who can only read and write Nepali, 33 percent were 1-5 grade (class) passed and 13 percent were 6 –10 grade.

Figure No 2

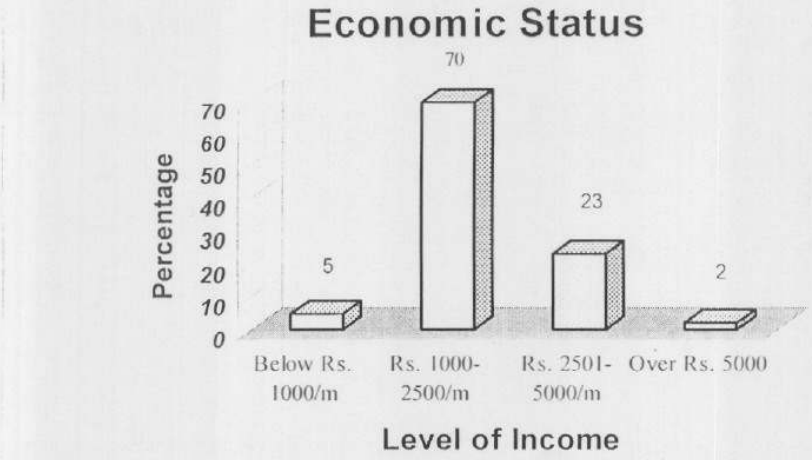
Distribution of respondents according to family structure



Regarding the family structure of the respondents, the result showed that there were 18 percent of them living in joint family and 82 percent living in nuclear family.

Figure No 3

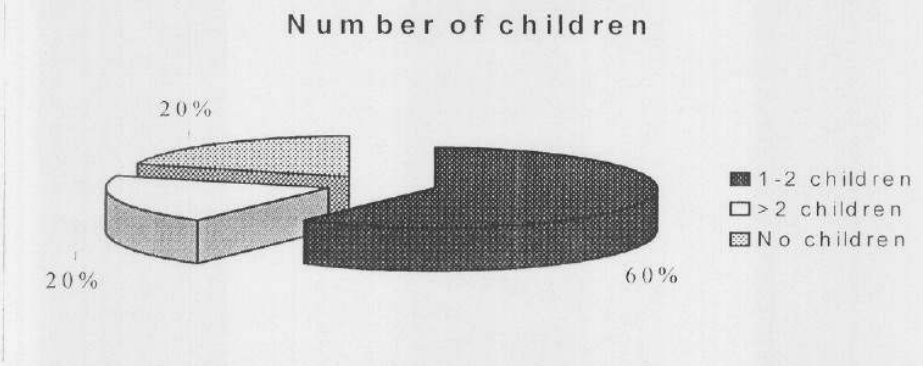
Distribution of respondents according to economic status



Concerning the respondents' economics status, the result showed that, 5 percent earned below Rs. 1000 per month, where as 70 percent earned Rs. 1000- Rs 2500 per month, 23 percent earned Rs. 2501-Rs. 5000 per month and other 2 percent earned over Rs. 5000 per month.

Figure No 4

Distribution of respondents according to have number of children



Regarding the number of children of those married, the result showed that 60 percent respondents had one to two children, whereas 20 percent had more than two children and rest of 20 percent had no children due to newly married.

4.3 Environmental Information

Under environment information present living arrangement, no. of people sleeping in a room and view of respondents towards their home environment has been studied carefully as all these factors play vital role on transmission of Tuberculosis.

Table No 2

Number and percentage of respondents according to environmental information

Environmental Information	Number (100)	Percentage (100)
♦ **Present living arrangement**		
In the factory	75	75
Outside the factory	25	25
♦ **No. of person sleep in a room**		
Up to 2 person	22	22
3 to 4 person	42	42
More than four person	36	36
♦ **Respondents view of the home environment**		
Clean	71	71
Dirty	29	29

Summarized data from Table 2 revealed the present living arrangement. 75 percent were living in the carpet factory and rest of 25 percent was living out side the factory among them some lived in rented house and some lived in own house.

Regarding to the number of persons sleeping in a room, the result shows that 22 percent for up to two persons, where as 42 percent for three to four (3-4) person and others 36 percent for more than four person. It was found that a minimum one person and maximum 14 persons slept in a room.

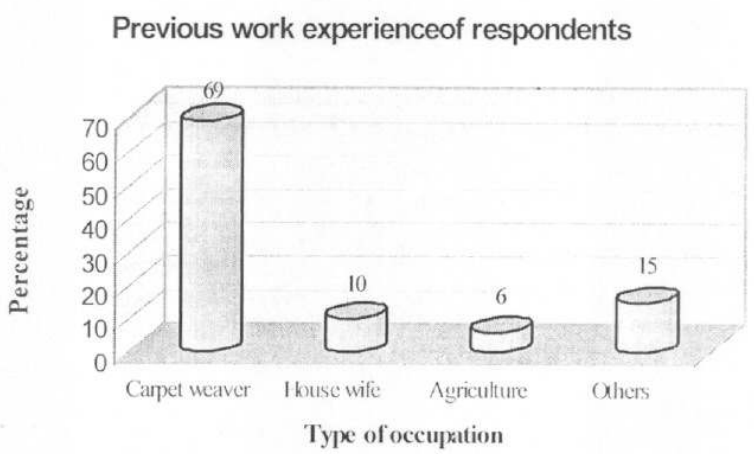
Regarding the respondent's view of the home environment, 71 percent of respondents referred to clean environment of their home and 29 percent of them mention dirty environment of home.

4.4 Associated Risk factors of PTB

Risk factor is an attribute or exposure that is significantly associated with the development of disease. So, the following risk, factors have been studied carefully such as previous work experience, previous work experience in other carpet factory, cause behind the leaving work from previous factory, total number of numbers working in same carpet factory from a house, duration of working in present carpet factory and prevalence of PTB.

Figure No 5

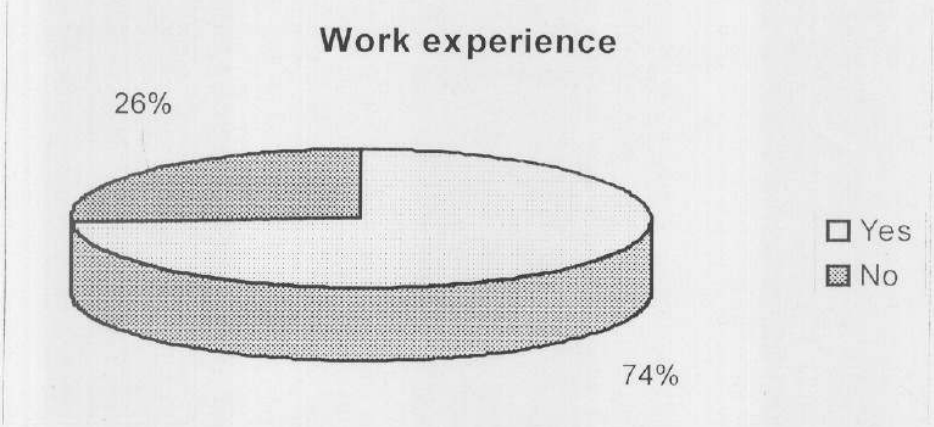
Distribution of respondents according to Previous work experience



Regarding the previous work experience of the respondent, 69 percent of them were carpet weavers, 10 percent were house wives that is only the female, where as 6 percent were engaged in agriculture and others15 percent were student, carpenter, cook and labor.

Figure No 6

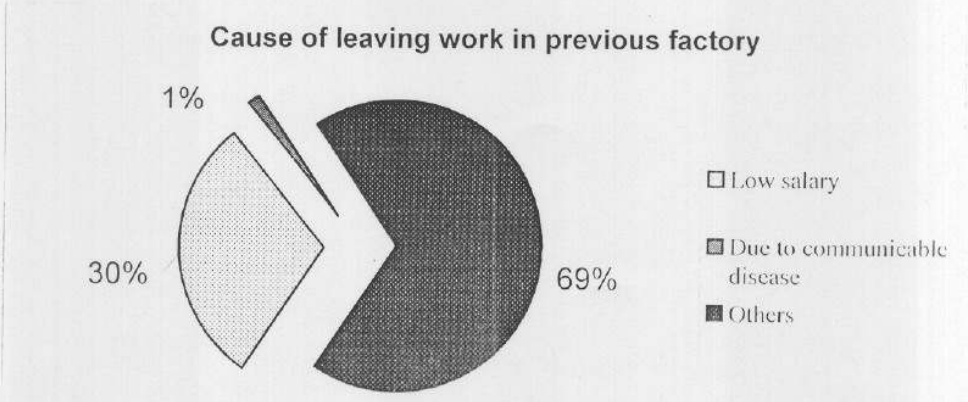
Distribution of respondents according to Previous work experience in other carpet factories



Regarding previous work experience in other factories, 74 percent of respondent said 'Yes' and 26 percent said 'No' to working in other carpet factories before this.

Figure No 7

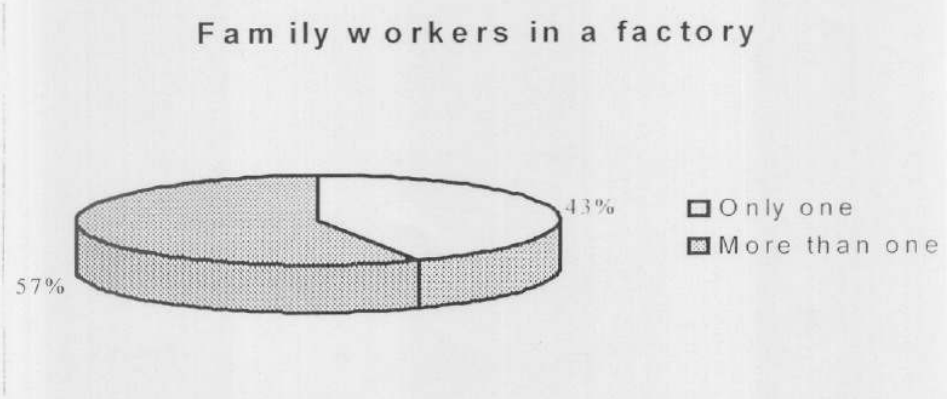
Distribution of respondents according to cause behind the leaving work from previous carpet factory



Concerning the cause behind the leaving work from previous factory, 74 respondents who did previously work in other factory, among them 30 percent of respondent had left work from the previous factory due to low salary, where as only one percent had left due to communicable disease and others 69 percent had left due to closing of the factory, transfer of the factory in other place, personal problem and marriage.

Figure No 8

Distribution of respondents according to total number of members working in same carpet factory from a house



Concerning the number of person is working in this carpet factory from your house, the result showed that, there were 43 percent had only one person from a house and 57 percent had more than one person.

Table No 3

Distribution of respondents according to duration of working in present carpet factory

Duration	Number (100)	Percentage (100)
Less than one year	30	30
One to two year	25	25
More than two to five year	28	28
More than five year	17	17

Summarized Table No 3 revealed that the duration of working in present factory was 30 percent less than one year, 25 percent were one to two years, 28 percent were working more than two to five year and 17 percent were working more than five years.

Table No 4

Distribution of respondents according to prevalence of PTB

Responses	Number (100)	Percentage (100)
♦ Have you ever heard TB		
Yes	97	97
No	3	3
♦ Have you ever seen any TB patient		
Yes	57	58.76
No	40	41.24
♦ Have you had PTB before		
Yes	3	3.09
No	94	96.91
♦ If yes, who did you consulting for treatment		
Go hospital Doctor	2	66.67
Health post	1	33.33
♦ Any body had PTB in your household		
Yes	11	11.34
No	86	88.66
♦ Any body had PTB in your working place		
Yes	25	25.77
No	31	31.96
Don't know	41	42.27

Summarized Table No 3 showed only 97 respondents had heard about TB before. Among them, regarding the answer of have you ever seen TB patient, 58.76 percent said 'Yes' and rest 41.24 percent said 'No'.

Regarding "have you had PTB before," only 3.09 percent of respondent had PTB before and 96.91 percent did not have PTB before. Among 3 respondents who had PTB before

had consulted hospital Doctor for treatment were 66.67 percent and 33.33 percent of them had consulted in health post for treatment.

Regarding TB patients in home, 11.34 percent said 'Yes' and 88.66 percent said 'No'. Like wise regarding do you know any TB case in your working place, 25.77 percent said 'Yes', 31.96 percent said 'No' and 42.27 percent said don't know.

4.5 Causes Behind Working in Carpet Factory

Table No 5

Distribution of respondent according to Causes behind the working in carper factory

Causes	Number (100)	Percentage (100)
Due to illiterate	15	15
Due to not available another job	51	51
Due to self interest	15	15
Due to experience	25	25
To earn money	10	10
Others	10	10

*** Response by duplication**

Regarding the causes behind the working in carpet factory, the respondent could choose more than one cause. The data revealed that, 15 percent respondents said due to illiterate, 51 percent of them worked due to no availability of another job, 15 percent said due to self interest, 25 percent said due to experience, 10 percent said to earn money and others 10 percent said due to peer pressure.

4.6 Health program in the carpet factory

Table No 6

Distribution of the respondents according to participate in health program in the carpet factory

Responses	Number (100)	Percentage (100)
♦ **Participate in health program in the factory**		
Yes	32	32
No	68	68
♦ **If yes, which agencies render the health program**		
Can tell the name of agency	9	28.13
Don't know	23	71.87

Regarding the participation in health program in the factory, the result showed that the response of the respondent 'Yes' was 32 percent and 68 percent were responded 'No'. Among them who participated in the health program in carpet factory, regarding which agencies render the health program, only 28.13 percent said the name of the agency who rendered the health program in there and 71.87 percent said don't know the name of agency.

4.7 Awareness towards PTB

Table No 7
Distribution of respondents according to awareness regarding PTB

Knowledge	Number (100)	Percentage (100)
Ever heard about TB		
Yes	97	97
No	3	3
If yes, what types of disease *		
Common disease	6	6.19
Not curable disease	-	-
Communicable disease	69	71.13
Curable disease	57	58.76
Others (don't know)	9	9.28
If communicable disease, route of transmission of PTB*		
Coughing, sneezing and talking (droplet)	52	75.36
Sitting together	23	33.33
Eating together	19	27.54
Don't know	4	5.80
Cause of PTB*		
Evil spirit	-	-
Bacteria	13	13.40
Lack of nutrition	30	30.93
Pollution	30	30.93
Alcohol and smoking	57	58.76
Don't know	15	15.46
Common sign and symptom of PTB*		
Chest pain	64	65.98
Fever in evening	59	60.82
Blood with sputum	65	67.01
Continue cough for three weeks or more	62	63.92
Loss of weight and appetite	61	62.89
Don't know	18	18.56

Source of information*		
Radio	33	34.02
Television	53	54.64
News paper	23	23.71
Community organization	28	28.87
Others (friends, neighbor)	18	18.56
Is there any vaccination against PTB?		
Yes	39	40.21
No	12	12.37
Don't know	16	17.17
Preventive measure to disease contamination to other person from PTB patient*		
Keeping Patient separate	47	48.45
Avoid touching food	31	31.96
Giving medicine (treat PTB in time)	80	82.47
Others (don't know)	4	4.12
Know about treatment of PTB		
Yes	70	72.16
No	27	27.84
If yes, how long should be medicine continue		
6 months	16	22.86
8 months	32	45.71
12 months	9	12.86
18 months	4	5.71
Others	9	12.86
Know where treatment is available		
Yes	83	85.57
No	14	14.43
If yes, where available*		
Health post	49	59.04
Hospital	52	62.65
Dots center/Sub center	41	49.40
TB Hospital Thimi	61	73.49
Preventive measures for PTB		
Yes	63	64.95
No	34	35.05
If yes, what are those? *		
Taking BCG vaccine in childhood period	28	44.44
Treat the patient as early as possible	31	49.21
Cover your mouth while coughing sneezing and don't spit out carelessly	46	73.02
Others	18	28.57

*** Response by duplication**

Summarized data from Table No 7 revealed that 97 percent of respondent had heard about TB and only 3 percent said never heard about TB before.

Regarding the type of disease, the respondent could give more than one answer. The data showed that 6.19 percent of respondents had given the answer, 'PTB is common disease', 71.13 percent said 'communicable disease', 58.76 percent said 'curable disease' and 9.28 percent said 'don't know'.

Concerning the route of transmission of PTB, the respondent could mention more than one route of transmission. The data revealed that 75.36 percent said 'coughing, sneezing and talking (droplet)', 33.33 percent of respondent said 'sitting together', 27.54 percent said 'eating together' and rest of 5.8 percent said 'don't know'.

Concerning the cause of PTB, the respondent could mention more than one cause.13.40 percent said 'due to bacteria', 30.93 percent said 'due to lack of nutrition', 30.93 percent said 'due to polluted environment', 58.76 percent said 'due to alcohol' and smoking and 15.46 percent said 'don't know'.

Regarding the sign and symptom of PTB, the respondent could mention more than one sign and symptom of PTB. 65.98 percent said 'chest pain', 60.82 percent said 'fever in evening', 67.01 said 'blood in sputum', 63.92 percent said 'continue cough for 3 weeks' or more, 62.89 percent said 'loss of weight and appetite', 18.56 percent said 'don't know the sign and symptom'.

Regarding the sources of information on PTB, the respondent could choose more than one source. The data revealed that majority of respondents received information about PTB from television 54.64 percent followed by Radio 34.02 percent, News paper 23.71,community organization 28.87 percent, and other like friends, neighbor 18.56 percent.

Regarding the vaccination availability of PTB, 40.21 percent said 'vaccine of PTB is available', 12.37 percent said 'No' and 47.42 percent said 'don't know' whether the vaccine is available or not.

Concerning the preventive measure to disease contamination to other person from PTB patient, the respondent could give more than one preventive measure. The data revealed that, 48.45 percent said 'by keeping patient separately', 31.96 percent said 'avoid touching food', 82.47 percent said 'giving medicine/ treat in time', 4.12 percent had no idea about this.

Regarding the knowledge about where treatment is available, the respondent could give more than one treatment available place. 85.57 percent respondents knew the place of TB treatment and 14.43 percent didn't know place of TB treatment. Among them who knows the treatment place, 59.04 percent said in Health Post, 62.65 percent said in hospital, 49.40 percent said in DOTS center/sub center, and 73.49 percent said in (NTC) TB Hospital Thimi.Concerning the any preventive measure for PTB, 64.95 percent said 'Yes' and 35.05 percent said 'No.'

Concerning the preventive measure of PTB, the respondent could say more than one preventive measure. Only 44.44 percent of respondent said 'taking BCG vaccine in childhood period', 49.21 percent said 'by treating the patient as early as possible', 73.02 percent said 'by covering mouth while coughing, sneezing and don't spit out carelessly', and rest of the 28.57 percent said 'other preventive measure like avoiding alcohol and smoking, giving balance diet and keeping environment clean'.

Table No 8

Association between sex, and education with awareness of respondents on Pulmonary Tuberculosis

Responses	Awareness level									
	0 level		Low level		Moderate level		High level		Total	Percentage
	Number	%	Number	%	Number	%	Number	%		
♦ **Sex**										
Male	1	1	2	2	19	19	35	35	57	57
Female	2	2	1	1	15	15	25	25	43	43
Total	**3**	**3**	**3**	**3**	**34**	**34**	**60**	**60**	**100**	100

Responses	Awareness level									
	0 level		Low level		Moderate level		High level		Total	Percentage
	Number	%	Number	%	Number	%	Number	%		
♦ **Educatio n**	2	2	2	2	9	9	17	17	30	30
Literate	1	1	-	-	10	10	13	13	24	24
Illiterate	-	-	1	1	12	12	20	20	33	33
1-5 Class	-	-	-	-	3	3	10	10	13	13
6-10 Class										
Total	**3**	**3**	**3**	**3**	**34**	**34**	**60**	**60**	**100**	**100**

Association between sex, and education with awareness of respondent on Pulmonary Tuberculosis

Characteristic	Awareness level				X^2	df	P-value
	Moderate		High				
	No	%	No	%			
Sex					**0.11**	**1**	**0.74**
Male	22	22	35	35			
Female	18	18	25	25			
Education					**0.20**	**1**	**0.66**
Illiterate	13	13	17	17			
Literate	27	27	43	43			

The data of 0 level and low level respondent in moderate level are included because of small cell. In this table, literate also includes 1-5class and 6-10 class.

Concerning sex of the respondent, male respondent had higher level of awareness (35 percent) than female respondent (25 percent). Similarly 22 percent male had moderate level of awareness than female (18 percent). Analyzed the data did not find significant association between sex and awareness on PTB of respondent (P-Value = 0.74 and X^2 = 0.11)

Regarding the educational status the high score of awareness on PTB among illiterate and literate respondents, it revealed that literate respondent who can read and write only as well as up to 10 class passed is better in awareness PTB (43 percent) compared to (17 percent) illiterate respondents. Likewise 27 percent literate respondent had moderate knowledge than illiterate respondent (13 percent). It showed no statistically significant association between educational status and respondent awareness on PTB. (P Value = 0.66 and $X^2 = 0.20$)

CHAPTER V

5. Discussion, Conclusion and Recommendation

Tuberculosis is one of the major public health problems in Nepal. About 45 percent of the total population are infected with TB, out of which 60 percent are in productive age group. Every year 44000 people develop active TB, of whom 20000 have infectious cases. These cases are capable of spreading disease in the community.

The problem of TB is more prevalent among economically poor, malnourished and less educated population, as well as migrants. Many people work in industries like carpet factories. They are the high-risk people of communicable disease such as TB. Therefore the carpet workers and young people need to be aware about Tuberculosis disease, its causative agent, risk actions, transmission, treatment and prevention of transmission is essential in other to protect them.

5.1 Discussion

The descriptive and exploratory survey was conducted to assess the awareness regarding Pulmonary Tuberculosis among carpet workers of productive age group (15-49 years) in Lalitpur District. This study confined carpet workers of Lalitpur District. There are about 183 carpet factories in Lalitpur District and approximately 7320 people are employed. Among them 100 respondents from eight-carpet factories were included in the study. The simple random sampling procedure was adopted to select the respondents and questionnaire filled up by interview technique by researcher herself from 8th to 14th Baishaka.

5.1.1 General characteristics of respondents

It was found that 57 percent were male and 43 percent were female. Among them, 47 percent were 15-24 years of age group, 44 percent were of 25-34 years, 8 percent were of 35-44 years and 1 percent was 45-49 years. The mean age is 25.77 years. More than half of them were Hindu (53%), 45 percent was Buddhist and others 2 percent were Christian.

In the found different ethnic group, 36 percent were Lama, 21 percent were Newar, 26 percent were Magar/Gurung/Rai/Limbu 5 percent were Brahman/Chhetri and others 12

percent were Kami/Damai/Sarki. 83 percent had temporary residence and most of them were lived in the factory, only 17 percent had permanent resident. 78 percent were married respondent, 20 percent were single and 2 percent were separate.

5.1.2 Socio economic characteristic of respondents

Socio economic factors are interrelated and contribute to the occurrence and spread of tuberculosis, such as lack of education, large family, low income and so on effect the directly and indirectly more risk.

The result of the study showed that most of the respondents were of low socio economic status. The education of the respondent showed that 30 percent respondents were illiterate, 24 percent were literate who could only read and write Nepali, 33 percent were 1 to 5 grade of school and 13 percent were in 6 to 10 grade. But nobody was found to be in the higher education within study population.

Regarding family structure, 82 percent had nuclear family and rest of the 18 percent had joint family. 60 percent respondent had 1 to 2 children and more than 2 children and no children respondent were same percentage (20 percent).

Regarding income, 70 percent respondents earned Rs.1000 –Rs.2500 per month, 23 percent earned Rs.2501-Rs.5000 and 5 percent and 2 percent respondents earned below Rs.1000 and above 5000 per month respectively.

5.1.3 Environmental information

Good environment is the most important factor for prevention of communicable diseases. In this study the result showed that 75 percent respondent were living in the factory residence and 25 percent who had their own house and rented house were living in outside the factory.

Regarding the number of people sleeping in a room found that, 22 percent respondents slept in a room up to two persons, 42 percent three to four person and 36 percent more than four person. The minimum person was one and maximum 14 person slept in a room. According to respondent's views, 71 percent respondent said clean environment around their house and 29 percent said dirty environment around the house.

5.1.4 Associated risk factors of PTB

Regarding the previous work experience of the respondent, it was found that 69 percent respondents had work experience as a carpet weaver, 10 percent were housewife, 6 percent were involved in agriculture and other 15 percent were student, cook, carpenter and labor in the past. 74 percent respondent worked in other carpet factory in the past and 26 percent never worked in the carpet factory in the past.

Concerning the cause behind leaving the work from previous carpet factory, it was found that only 1 percent respondent said due to communicable disease, 30 percent respondent said due to low salary and others 69 percent said due to close factory, transfer factory in other place, personal problem and marriage.

Concerning the number of person working in same carpet factory from their house; it was found that 43 percent worked only a person from their house and 57 percent worked more than one person from their house in a same carpet factory.

30 percent respondents were working from less than one year in present factory, where as 25 percent from one to two years, 28 percent from more than two to five years and 17 percent from more than five years.

5.1.5 Prevalence of PTB

58.76 percent respondents had seen the TB case. Only 3.09 percent respondents had Pulmonary Tuberculosis before and 66.67 percent of respondent consulted the hospital doctor who suffered from PTB and 33.33 percent consulted in health post for treatment.

Only 11.34 percent respondent had PTB case in their house. 25.77 percent respondent know the PTB case in their working place and other 74.23 percent respondent did not know the PTB case had in their working place.

5.1.6 Cause behind working in carpet factory

Concerning the cause of working in carpet factors, it seemed that 51 percent of respondents said 'due to another job not available', 15 percent said 'due to illiteracy', 15 percent said 'due to self interest', 25 percent said 'due to experience', 10 percent said 'to earn money' and other 10 percent said 'due to peer pressure'.

5.1.7 Health program in carpet factory

Only 32 percent respondent were participate in the health with in carpet factory and among them only 28.13 percent could tell the name of agency who run the health program in the carpet factory.

5.1.8 Source of information in Tuberculosis

The concept of globalization and modern technologies is developing day to day. In this process, audio-visual device "Television" is felt needed to every body for their multi purpose function, from recent world news, educational aid to other entertainment. In this study, the respondent could choose multiple source of information on Tuberculosis they had received, the study formed that television was an effective source that most of the respondent received information about Tuberculosis (54.64 percent) followed by Radio, News papers, community health organization and others were 34.02 percent, 23.71 percent, 28.87 percent and 18.56 percent respectively.

5.1.9 Knowledge of Respondents on PTB

The respondents were asked about what are PTB, causative agent, and mode of transmission, sign and symptom of PTB, prevention and treatment on PTB. The result of this study showed that respondent had high level knowledge on PTB in 60 percent, moderate level in 34 percent, 3 percent were low level and 3 percent were 0 level knowledge in PTB. 97 percent respondent had heard about TB. 71.13 percent respondent answered the correctly question about PTB is communicable disease. 75.36 percent had correct knowledge about route of transmission. Only 13.40 percent respondent answered correctly the question "cause of PTB". Majority of respondents had knowledge about common sign and symptom of PTB. Only 40.21 percent respondents knew the available of vaccine of PTB. 82.47 percent respondents had known about preventive measure to disease contamination to other person from PTB patient. 72.16 percent respondents know about treatment of PTB. Among them 45.71percent of respondent had knowledge on duration of medicine continue. 85.57 percent respondent knew the treatment available place. 64.95 percent respondent knew the availability of preventive measure of PTB. Most of them answered the correctly question of preventive measure for PTB.

This findings is nearly similar to the research of Marinac J.S. et.al (October 1998).[11]

5.1.10 Association between sex, and education with awareness level of respondent and on PTB

Concerning the association between sex, education and awareness level on PTB among carpet workers. The result of this studied showed that sex and education were not statistically significant association with awareness level of respondent. (P value =0.74, X^2 = 0.11 and P value=0.66, X^2=0.20) Which was similar to the research of Singla N, Sharma PP.[17]

5.2 Conclusion

This description study was carried out to determine awareness level regarding PTB among carpet workers of productive age group at the carpet factory in Lalitpur District. The sample size (100 sample) was too small to generalize these findings. The result of this study may be significant in certain areas only.

The majority of the respondents were male, 25-34 years of age and Hindu religion. Most of their castes were Lama, Magar/Gurung, Rai, Limbu in comparison to Newar. 83% respondents had come from other places of one country. Majority of respondents' education was 1-5 class of school passed and 30 percent were illiterate. Most of the respondents' (70%) income range was Rs.1000-Rs.2500 per month.

Majority of respondents (78%) was married and had one to two children (60%). Most of respondent had nuclear family (82%).

75 percent respondent lived in the factory. 42% respondents slept with three to four people in a room. Majority of the respondents has had clean home environment (71 percent).

Most of the respondents (69 %) had previous work experience as a carpet weaver. 74 percent respondents worked in carpet factory in the past and among them 69 percent had left work from previous factory due to closing of the factory, transfer of the factory, personal problem and marriage and only 1 percent respondent left due to communicable disease in the factory.

More than one person from a house worked (57 percent respondents' house). 30 percent respondent were working from less than one year.

58.76 percent respondent had seen TB patient. Only 3.09 percent respondent had PTB and among them 66.67 percent had consulted hospital doctor for treatment. 11.34 percent of respondents' house had PTB patient. Only 25.77 percent of respondent knew the PTB to the carpet worker in their working place.

Majority of the respondents (51%) worked in carpet factory due to another job not being available. 32% respondent participated in health program in the carpet factory and among them only 28.13 percent could tell the name of the agency.

Majority of the respondents (54.64 %) received the information from television. 97 percent respondent heard about TB. 71.13 percent respondent answered correctly about PTB in communicable disease. Majority of respondent (75.36%) had knowledge on transmission of PTB but only 13.40% knew the cause of the PTB, majority of respondent (44.33%) said the cause of PTB is due to excessive drinking alcohol and smoking. Majority of respondent knew the common sigh and symptom of PTB. 40.21 percent respondent knew about vaccination against PTB.

Majority of respondent (82.47%) knew about giving medicine or treatment on time to prevent disease contamination to other person from PTB patient. 72.16 percent respondent knew about treatment of PTB and 46 percent respondent knew the correct duration of medicine should be continue. Majority of respondent knew the treatment available place. 64.95 percent respondent said preventive measure for PTB is available, among them majority of respondent knew the correct preventive measure.

The study revealed that sex and education did not have statistically significant association with awareness level on PTB.

According to the finding, it can be concluded that a small number of respondents had high level of awareness and access to a wide range of different information sources helps to obtain knowledge on PTB. It is also showed that low socio economic status of carpet worker as well as high risk factors and poor environment in the residence and working place of respondents.

5.3 Recommendation

On the basis of the study, the recommendations are given below.

5.3.1 Recommendation for the further study

- It is recommended that a large-scale study can be conducted by using more refined tools in various parts of the country, so that the findings can be generalized.
- It is recommended that such types of study can be conducted in other district.
- It is recommended that such types of study on awareness of Tuberculosis should be conducted in other industries.
- Intervention study on the same topic can be done among carpet workers as well as other industry's workers.

5.3.2 Recommendation for IEC program

- Effective IEC program should be launched for the industrial worker by using all the available media as well as street drama show around the industrial areas.
- Raise the status of carpet workers through health education program.

5.3.3 Recommendation for NHRC

- Encourage and conduct research about health status in the society and what should be done to improve the status of people's health.
- Support more students to conduct qualitative research on health in the community.
- Encourage and support to students to implement or conduct health action according to their research finding for improvising health status of individual, family, community and nation.

5.3.4 Recommendation for carpet factory

Healthy people can do energetic work so that it helps to produce qualitative work / goods from factory. Therefore, the researcher would like to recommend the carpeting owners.

- They should give time to carpet workers to involve in health education program and should encourage improving environment around their working place.
- Allow the conduct health program from health agency in the carpet factory.
- Cross ventilation prevents to transmit the communicable disease so that each carpet factory should be improved ventilation in the factory.
- A child is the future star of every country. They have low immunity power to fight with disease, so the child should not be kept in front of "Taan" in carper factory. It may develop respiratory problem as well as communicable diseases. Therefore, carpet owner should be managed childcare room for women carpet workers.
- Launch literacy classes to carpet workers, which help to gain knowledge about health as well as to improve their health status.

5.3.5 Recommendation for NTP

- TB control program should be launched through health education or awareness program about TB to carpet owners as well as carpet workers.
- TB control program should be conducted awareness on TB program for carpet workers as well as other industry's workers through mass education by using video show, street drama and exhibition etc.

5.3.6 Recommendation for other Health agency

- For improving health status of people, preventive care is better than curative care. So distribution of medicine is not only improvement of health status. That is why the researcher would like to recommend to health agency who work in industries that they should emphasize on health education rather than curative treatment.

Difficulties faced during study

- Some respondents took much time because they talked about their own problems, which the investigator had to listen and response too.
- It was difficult to maintain privacy during data collection at the carpet factories.
- It was difficult to take time from carpet workers because they were afraid of the contractor, so researcher had gone to working place.
- Some carpet workers did not want to give answer because of shyness.

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APPENDIX 'A'

TRIBHUVAN UNIVERSITY

INSTITUTE OF MEDICINE

NURSHING CAMPUS MAHARAJGUNG

BN 2nd Year, 2001

Tuberculosis awareness survey questionnaire

This question will be asked with carpet workers in carpet factory of Lalitpur District. Permission will be taken before asking question.

Agrees to answer questions (consent). Yes / No

Demographic data

Date: ____/____/____

Place of data collection: (Name of factory) _____

1. Sex (M/F): _____
2. Name of Participant: _____
3. Cast: _____
4. Age (in complete year): _____
5. Your birth date? (In Nepali) ____/____/____ (day/month/year)
6. Religion _____
7. **Address:**

7.1. Permanent Home Address

Zone_____ District. _____

VDC/Municipality_____ Ward No._____

Tole/Goun_____

7.2. Current Address

Zone_____ District _____

VDC/Municipality_____ Ward No. _____ Tole/Goun _____

Socio- economic data

8. What is your education level (Grade Passed)?

a. Literate (can read and write only) ☐ b. Illiterate ☐

c. 1 to 5-grade ☐ d. 6 to 10 grade ☐

e. Collage level ☐

9. What is your occupation before you joined this factory? _____

10. What is your average monthly income from all sources?

a. Less than 1000 ☐ b. 1000 to 2500 ☐

c. 2500 to 5000 ☐ d. over 5000 ☐

11. Marital Status

a. Married / Unmarried b. Separate / Divorced c. Widow /Widower

12. If married, how many children do you have? _____(Number of alive children)

13. Type of family respondents belongs

a. Nuclear ☐ b. Extended ☐

14. Number of persons working in the factory from (it) household.

15. Reason of respondents working in the carpet factory. _____

16. Do you have previous work experience in other factories?

a. Yes ☐ b. No ☐

17. If yes, causes of leaving the previous factories

a. Low salary ☐

b. Due to communicable disease ☐

c. Other ☐

(Please specify)_____

Environmental data

18. Present living arrangement

a. In the factory ☐

b. Out side the factory ☐

19. Number of person sleep in the same room. _____

20. Duration of work in this factory

a. Years _____ b. Month_____

21. Do you ever participate in Health Program in the factory?

a. Yes ☐ b. No ☐ c. I don't know? ☐

22. If yes, which agencies render the Health Program?_____

Awareness Questions

23. Have you ever heard "Tuberculosis"?

a. Yes ☐ b. No ☐

If no, please stop the interview.

24. If yes, what type of disease is it?

a. It is common disease ☐

b. It is not curable disease ☐

c. It is communicable disease ☐

d. It is curable disease ☐

e. Others (Specify)_____

24.1. If it is communicable disease, what is the route of transmission?

a. By coughing and sneezing (droplet) ☐

b. Sitting together ☐

c. Eating same plate ☐

d. Don't know ☐

25. What do you think about the cause of Tuberculosis?

a. By Evil spirit ☐ b. By Bacteria ☐

c. By lack of nutrition ☐ d. By pollution ☐

e. By Alcohol / Smoking ☐ f. Don't know ☐

26. What are the common signs and symptoms of TB?

a. Chest pain ☐ b. Fever in evening ☐

c. Blood with sputum ☐ d. Continue Cough for three weeks or more ☐

e. Loss of weight and appetite ☐ f. Don't know. ☐

27. If yes, what was / were the source of that information?

a. By Radio ☐ b. By Television ☐

c. By news paper ☐ d. Community organization ☐

e. Other (Specify)_____

28. Have you ever seen any person suffering from TB?

a. Yes ☐ b. No ☐

29. Is there any vaccination against TB?

a. Yes ☐ b. No ☐

30. How can we prevent disease contamination to other person from the TB patients?

a. Keeping patient separate ☐

b. Avoid to touch food ☐

c. Giving medicine ☐

d. Others ☐

31. Do you know about treatment of TB?

a. Yes ☐ b. No ☐

32. If yes how long should the medicine be continued?

a. 6 month ☐ b. 8 month ☐ c. 12 month ☐

d. 18 month ☐ e. Others (specify)_____

33. Do you know where is treatment available?

a. Health post ☐ b. primary health care center ☐ c. hospital

d. DOTS treatment center / sub center ☐ e. TB hospital Thimi ☐

34. Have you had Pulmonary Tuberculosis before?

a. Yes ☐ b. No (If no, Go Q.N.36) ☐

35. If yes, who did you consulting your TB sickness?

a. Faith healer ☐

b. Public Hospital Doctor ☐

c. Health Post ☐

d. Others (If any specify)_____

36. If you think, you have tuberculosis what will you do?_____

37. Are there any preventive measures for pulmonary Tuberculosis?

a. Yes ☐ b. No ☐

38. If yes, what are those?

a. Taking BCG vaccine ☐

b. Treat the patient as early as possible ☐

c. Cover your mouth while coughing and sneezing ☐

d. Do not spit out carelessly ☐

e. Others (if any specify)_____

39. Has anybody had PTB in your Household?

a. Yes ☐ b. No ☐

40.Has anybody had PTB in your working place?

a. Yes ☐ b. No ☐


नेपाल
उ
हुम्ला
दार्चुला
बझाङ्ग
बैतडी
बाजुरा
मुगु
डडेल्धुरा
डोटी
अछाम
कालीकोट
जुम्ला
डोल्पा
कञ्चनपुर
कैलाली
दैलेख
जाजरकोट
रुकुम
मुस्ताङ
मनाङ्ग
सुर्खेत
म्याग्दी
बर्दिया
सल्यान
रोल्पा
बागलुङ्ग
कास्की
लम्जुङ्ग
गोरखा
पर्वत
बाँके
प्युठान
गुल्मी
दाङ्ग
स्याङ्जा
तनहूँ
अर्घाखाँची
पाल्पा
कपिलवस्तु
रुपन्देही
नवलपरासी
चितवन
धादिङ्ग
नुवाकोट
रसुवा
काठमाडौं
भक्तपुर
ललितपुर
सिन्धुपाल्चोक
दोलखा
काभ्रे
सोलुखुम्बु
खोटाङ्ग
ओखलढुङ्गा
रामेछाप
सिन्धुली
भोजपुर
सङ्खुवासभा
ताप्लेजुङ्ग
तेह्रथुम
पाँचथर
इलाम
धनकुटा
उदयपुर
सप्तरी
सुनसरी
मोरङ्ग
झापा
सिराहा
धनुषा
महोत्तरी
सलाही
रौतहट
बारा
पर्सा