CHAPTER - 3

OCCUPATIONAL HEALTH HAZARDS - SURVEY AND ANALYSIS

3.1 INTRODUCTION

Health is very much essential for individual to live in this world. Health has evolved from an individual concern to a worldwide social group. According to WHO and ILO estimates for the year 2000 there are 2.0 million work related death per year. WHO estimates there are only 10-15 % of workers who have access to a basic standard of occupational health service (Park, 2011).

India's 1.5 million private sector beedi workers are among the most exploited workers in India. Beedi workers across India work in filthy, disease-causing conditions, breathing in tobacco fumes, often assisted by child workers who must be paid by the adult workers they help (Community Health Care, 2012).

Beedi is a forest product and also called poor man's smoke or poor man's cigarette. A standard beedi contains about 0.2 grams of rolled tobacco flakes. Tobacco tendu leaf is also known as kendu or tamburni (Sudarshan et al., 1999). Beedi rolling is an entirely manual process. Laborers painstakingly place tobacco inside a small tendu leaf, tightly roll the leaf and secure the product with a thread. This process is largely home-based and is dominated by women and children. An average roller achieves an output of about 1000 beedis per day.

Beedi rolling remains extremely popular in India especially amongst women though being identified as hazardous occupation. Hour after hour of rolling beedis, takes a huge toll on the health of the beedi workers, many of whom live in unspeakable
poverty. Even as the WHO carries on a relentless global campaign against the consumption of tobacco, little concern is exhibited about women beedi workers. These women who sit in one position for 10-16 hours a day rolling beedis inhale huge amounts of tobacco dust (Aghi and Gopal, 2001). Although beedi rolling has been identified as a hazardous occupation, the health and working conditions of beedi workers has not been in the forefront of public consciousness. The reasons for this could be the lack of mobilization among beedi workers themselves.

Inhalation of tobacco dust during beedi rolling causes health problems. However other factors that affect their health may be due to lack of nutritious food and unclean environment and also due to working in a dark, ill-ventilated room. The irony is that the women are not even aware that this work is ruining their health.

Years of this kind of work, a beedi roller end up with as bad a lung condition that of an active smoker and also become more prone to disease like tuberculosis, asthma and other diseases of the lung. Ingesting tobacco also has adverse consequences on reproductive health (Rajasekhar and Sreedhar, 2007). According to the government of India 22,00,000 lakhs women making beedis belong to lower socio-economic groups (extreme poverty). They have long working hours and limited or no alternative sources of livelihood.

Experience over the years has shown that increasing 'feminization of the work force' or the segregation of women into certain kind of low-paid, dis-empowering jobs has adverse implication on their health. The resulting health problems include weakening of the eye sight, backache, headache, loss of weight, loss of hearing, extreme tiredness and fatigue.
Respiratory impairments among the exposed workers were reported to be caused by the varieties of dust in small and large scale industries generated during their production processes. In beedi workers, the occupational stress associated with long hours of work, exposure to tobacco dusts and poor working conditions are superimposed on the handicaps of poor socioeconomic and nutritional status. The salient features were that the subjects experienced symptoms like nausea, giddiness, vomiting, headache, tiredness, loss of appetite, weakness, cough, and breathlessness.
3.2 MATERIALS AND METHODS

3.2.1 Area of Selection

The name Melapalayam is derived from its location west of Palayamkottai, Tirunelveli. In Tamil 'Mela' meaning 'West' derived from the word 'Merkku'. Melapalayam is one of the administrative municipal of Tirunelveli Corporation situated in South Indian State of Tamil Nadu with 80% of Muslims and remaining Hindus and Christians. It is located in eastern bank of famous perennial Thamirabarani River. Its east side is covered by Oxford of South India-Palayamkottai. It gets green look in Western side as it is surrounded by fertile paddy fields. Melapalayam was earlier known as Keela Veera Ragavapuram in British Rule. Old age Tamil Name was "Mangai maa nagar". The total distance between Tirunelveli and Melapalayam is 4.1 km (2.6 miles).

3.2.2 Literacy

Melapalayam has an average literacy rate of 62.39% higher than the national average of 59.5%. Male literacy is 71.59% and Female literacy is 28.41%.

3.2.3 Education

The city was most backward in education till 21st century. Schools have been developed and education reaches almost every children in the city. Many welfare trust have been formed for these social awareness favoring education.

3.2.4 Business

In early years, handloom trading was a main business. They exported handloom products to various countries such as Srilanka & Burma. Now this business totally
vanished from the city. As an alternate, Beedi Industry took a place and playing major role in Melapalayam Economy. Most women are engaged in Beedi Rolling works. The predominant business of the people is “Beedi manufacturing”. Many of the beedi manufacturers in South India laid their production units in and around Melapalayam.

A cross sectional study was carried out through a questionnaire which gave information regarding their social and economic background and common occupational health hazards among the beedi rollers population in Melapalayam.

As the first phase of present study, a survey of beedi worker population was carried out in Melapalayam of Tirunelveli District during August 2010 to December 2010 through oral questioning and semi structured questionnaire (Annexure 1). Data regarding general information about the family, occupation, annual income, educational background and working environment were collected.

A random sample of thousand women beedi rollers were interviewed about occupational health problem they face and their responses were recorded and categorized. Data was subjected to statistical analyses through Microsoft excel and SPSS software version 16.0.
3.3 RESULTS

The present study summarizes socio-economic status and occupational health problems common among women beedi workers. In Tirunelveli, it was estimated that there were 5.5 lakhs beedi workers; most of them are women. Women constitute a major percentage of beedi manufacturing. Yet, children help their mothers in beedi rolling in selected families. Some women were engaged in beedi rolling as a full time occupation and 80% of the respondents able to roll 800-1200 beedis during 8-12 hrs/day. The remaining 20% of women work part time while caring for children and attending to household duties and rolled 300-500 beedis / day (Fig. 3.1).

**Figure 3.1**

**Occupation Mode**

Most of the family members of beedi workers interviewed had some primary education and about 45% of the respondents were illiterate, 25% had only primary education, 20% with secondary education, only 10% did higher secondary school (Fig. 3.2).
Children helped their mothers in beedi rolling in most of the families in Melapalayam. 80% of the children engaged themselves in beedi rolling during vacation and weekends. 10% of the respondents worked during their holidays and another 10% involved occasionally (Fig. 3.3).
As per the data collected from women beedi rollers in Melapalayam 50% of the population live in own houses, 40% of the population occupies rented house and remaining 10% occupies houses purchased on lease. Some respondents live in asbestos shed houses. In general they dwell in an unhygienic and unhealthy environmental situation (Fig. 3.4).

**Figure 3.4**

*Type of House occupied by beedi workers*

In the present study, thousand women beedi rollers were interviewed randomly and the findings were analysed. On the whole, most beedi workers reported aches and musculoskeletal pains (Annexure - 2).

14% of the respondents among the age group of 20-30 reported wrist pain, 21% possessed shoulder pain 12% respondents had back pain, 14%, 18% and 30% of the respondents possessed finger numbness, eye irritation and gastrointestinal problem (Fig. 3.5).
Among the age group of 30-40, 21% respondents reported wrist pain, 22% had shoulder pain, 25% had back pain, 21% possessed finger numbness, 23% had eye irritation and 20% reported gastro intestinal problem (Fig. 3.6).
Among the age group of 40-50, 24% of the respondent had wrist problem, 17%, 30%, 41%, 32% and 26% of the respondent reported shoulder pain, back pain, finger numbness, eye irritation and gastro intestinal problems respectively (Fig. 3.7).

**Figure 3.7**

Aches and pains among the age group of 40-50 of beedi roller population

![Aches and pains among the age group of 40-50 of beedi roller population](image)

40% respondent among the age group of 50-60 reported shoulder pain, 30% had back pain, 32% possessed eye irritation and 26% had gastro intestinal problem and 41% recorded wrist pain and finger numbness (Fig. 3.8).

**Figure 3.8**

Aches and pains among the age group of 50-60 of beedi roller population

![Aches and pains among the age group of 50-60 of beedi roller population](image)
From the above findings it can be concluded that aches and pains positively correlated with age and working experience.

Clinical report of health hazard among beedi rollers in Melapalayam of Tirunelveli District was also obtained from the beedi workers Welfare Fund Dispensary to correlate the disorders reported by the respondents. A survey of occupational disorders from the year 2007-2011 were shown in graph (Figure 3.9). As per the data most of the women beedi rollers complained of respiratory problem, cardio vascular disorder, musculoskeletal disease and gastro intestinal disease.

**Figure 3.9**

**Health Hazards among beedi rollers in Melapalayam from 2007-2011.**

* (Courtesty : Beedi Workers Welfare Fund Dispensary)

2007

![Pie chart showing health hazards among beedi rollers in Melapalayam from 2007-2011.](image-url)
3.4 DISCUSSION

Beedi rolling is an entirely manual process. Laborers must painstakingly place tobacco inside a small tendu leaf; tightly roll the leaf and secure the product with a thread. This process is largely home based and is dominated by women and children. An average roller can achieve a daily output of about 1000 beedis per day. An already vulnerable sector of society, women and children engaged in beedi rolling face abuse, financial enslavement and a number of health problems.

The beedi industry in various states like Andhra, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamilnadu, Uttar Pradesh and West Bengal employs around 6 million workers in beedi manufacture. About 90% of these workforces are women and children (Srinivasalu, 1997). Women make the largest proportion of labour in the beedi industry. There are varying estimates that female contribute 76% of the total employment in beedi manufacture. The All India Beedi, Cigar and Tobacco Workers Federation estimated that women comprise 90-95% of total employment in beedi manufacture. Women are the primary beedi rollers and typically operate from their homes; other members of the same household may engage in beedi rolling to fulfill quotas. The result of the present study explored that 80% of the population in Melapalayam depend on the beedi industry for their livelihood and simultaneously fulfilling their role as home maker. There were nearly 5.5 lakhs workers in the beedi industry in Tirunelveli.

Government estimates find 15-25% of the industry’s employees are children. NGO estimates indicate that this is a gross underestimation of the size of the child workforce. Under the Child Labour Production Act, 1986, allowed for the employment of children under age 14 in home based work but the recent 2006 amendment prohibits
that too. However, beedi production units regularly exploit the loophole by giving work to families and enabling them to employ children. Children as young as 3-5 years are known to assist in the family’s work. It is estimated that roughly 10% of all female beedi workers and 5% of all male beedi workers are children under 14. In the present study results also revealed that 80% of the beedi workers children engage them self in beedi rolling before reaching school and again continue after returning back. According to Ghosh et al., (2005) entering to this profession starts from 15-16 year of age for both genders. Iqbal and Ghosh (2005) have opined that beedi workers start their work at tender age.

According to government estimates, beedi rolling employs around 4.45 million people, of whom 65% are women and 15 to 25% are children. Women often face discrimination and are paid less than men. Children are even worse, with no wage structure and usually get paid least. Most families working in the beedi industry live below poverty line (Aghi, 2003). Ghosh et al., (2005) has studied the socio economic status of the beedi workers in Nagpur and reported the average family monthly income Rs. 1710 where the minimum number of earning member was one. Thus it can be concluded that beedi workers were exposed to xenobiotics in the course of their occupation due to poor socio economic status which includes housing, education, and working environment.

Anil et al., (2012) who have studied the morbidity pattern of female beedi workers in Mangalore have reported the literacy status, it shows that only 19% are illiterate, 60% had primary education, 17% secondary education and only 4% had higher secondary education. In the present study result also show a similar data which
comprises of 45% illiterate, 25% possessing primary education, 20% having higher education and 10% has higher secondary education were observed.

According to Economic and political weekly (2002) considerable variation regarding the number of beedi rolled per day among the respondents. About 34% were rolling 501-800 beedis, 31%. 500 beedis and 22% more than 800 beedis per day. The number of beedi rolled per day was less than 300 in the case of remaining 13% respondents. Similar observations were also recorded in the present study.

In the second phase of the present study, beedi rollers were modified for occupation related exposure and resultant health hazards. In India, workers engaged in processing of tobacco for the manufacture if beedis (the indigenous substitute for cigarette) are chronically exposed to tobacco flakes and dust via the cutaneous and nasopharyngeal routes. ILO (2003) reported that most of the beedi rollers lived in small homes, which were mostly kept in clear constant inhalation of tobacco and sitting postures caused health problems for the workers asthma, tuberculosis, back strain, spondylitis, swelling of the limb, head ache, digestive problem, especially constipation, heavy menstruation and pain in the lower abdomen, leucorrhoea, complications of pregnancy, miscarriages and breast cancer.

Gopal (2000) reported that the women commonly suffered from physical ailments: 5 main symptoms were seen among women workers. 1) Aches and pains related to postural pattern during beedi rolling like backache, neck ache, head ache, burning of eyes, pain in the legs and numbness of the fingers were seen among 65% of respondents; 2) coughs were reported by 9.7%; 3) Stomach related pains including cramps, gas spasmodic pains leading to diarrhoea were reported by 8.4%; 4) giddiness and breathlessness were commons 5) other symptoms included piles, urinary burning,
white discharge joint pains and swelling, fevers, palpitation, wheezing and worry. Children who work for hours sitting cross legged making beedi often suffer from backaches and knee problems. Initially tobacco dust often makes them feel giddy and over the long term, many develop chronic bronchitis, asthma and even tuberculosis some complained of a burning sensation in the eyes and piles. Mahimkar and Bhisey (1995) reported several occupation specific health problems like backache and joint pain, giddiness and headaches, eye problem like watering, burning and poor vision. These problems were often unattended to. About 50-70% of the women reported gynaecological and related problems.

Gopal (1997, 2000) highlights the high levels of tension among beedi workers who are never secure about their status as workers. Their poverty, weak constitution, lack of rest, endless work, poor food habits have all been listed as factors making them susceptible to disease. Anaemia and malnutrition are also common among these women and children. Exposure to tobacco and the working conditions among beedi workers are known to have caused intestinal and reproductive problems (Lakshmidevi, 1985; Pande et al., 1990). Enclosed atmosphere of their dwelling over crowded, poor ventilation, badly lit, along with the waste of wet leaf and tobacco make the workplace very unhealthy. Due to the tobacco dust the workers are continuously exposed to their eyes which have burning irritation, problems like conductivities and mucous dryness (Khanna and Illango, 1993). Strain on their eyes is worsened among workers who work at night alongside dimly lit oil tamps. In the present study women beedi rollers in Melapalayam complained that they have frequent shoulder pain, neck pain, wrist pain, and back pain owing to the posture during their work. Headaches and leg pains were also reported by a few aged women. The results of the present study agree with an earlier report of Bagwe and Bhisey (1997) who reported that beedi rollers were affected
by lumbosacral pain. Dikshit and Kanhere (2000) and Mittal et al., (2006) have also reported postural pain among the beedi rollers. Ghosh et al., (2005) has evaluated the working postures of the workers and the most commonly reported health hazards among the beedi rollers in Karnataka, Kerala, Madhya Pradesh and Uttra Pradesh. Accordingly, 75% of the respondents reported frequent pain in shoulder, neck, and wrist and on the back, high intensity of shoulder back and neck pain due sitting in forward leaning posture and bending head and neck downward for prolonged hours without any support and arm rest. Rajasekhar and Sreedhar (2002) reported 25% of beedi rollers had backache in Dakshina Kannada. Gopal (2000) reported 65% of beedi workers had aches and pains. Sen (2007) who had investigated the health conditions of beedi worker in Madhya Pradesh had also claimed that 62.8% suffer from headache 51% from back pain and 20% from eye pain.

The other possible ill effect of beedi rolling is due to contact 70% of beedi rollers suffered from eye irritation (Kumar and Subburethina, 2010). Tobacco dust mainly contains nitrosamines which are readily observed by the body tissues like skin, respiratory epithelium, mucous membrane of mouth, nose and intestine (Rahman and Fukhi, 2000). Mittal et al., (2006) have given the opinion that the tobacco dust contains nitrosamines, polycyclic hydrocarbons, radioactive elements and cadmium. This view was supported by an earlier report of Robert (1988). Dikshit and Kanhere (2000) found eye problem and burning sensation in women beedi rollers in Bhopal. Mittal et al., (2006) had studied the ocular manifestation in beedi industry workers and reported common ocular symptoms like defective vision and eye irritation. In the present study also women beedi rollers have reported eye irritation as consequences of occupational exposure of tobacco dust.
Women beedi rollers experienced numbness of the fingertip after continuous exposure to tobacco during their work. A few reported that their fingertips became thin and became inefficient to roll beedis after a particular age. Similar reports were given by Dikshit and Kanhere (2000) and Mittal et al., (2006).

Beedi Workers Welfare Fund Dispensary reports enumerate respiratory disease, gastro intestinal disorders, cardio vascular disease, muscular disease, skin disease and genitourinary tract disease. It is inferred from the data that all the years a high incidence of respiratory disease were noted. Beedi workers also have registered musculoskeletal disease as the next major health problem in this dispensary. The above data has given the evidence that helation of tobacco dust may be responsible for respiratory ill effect and postural defect leading to musculoskeletal pain. These reports agree with an earlier report of Yasmin et al., (2010) that 50% of beedi rollers suffered from respiratory problems. According to Gopal (2000) 8.4% of beedi workers suffered from stomach related problem. Anil et al., (2012) reported gastro intestinal disorders in 13% of the population. Kumar and Subburethina (2010) revealed that 28% of beedi rollers possessed skin disease, 32% had anaemic problems and more than 70% suffered from gastrointestinal problem and more than 50% had respiratory ailments. Thus it is evident that beedi workers face a number of health hazards because of their occupation and prolonged exposure to the tobacco dust in an unhygienic working environment.