



# HEALTH IS WEALTH – A CASE STUDY ON FIREWORKS WOMEN WORKERS IN SIVAKASI

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## Abstract:

This study has been undertaken on Health is Wealth for all. India is one of the few countries in the world where women and men have nearly the same life expectancy at birth. The fact that the typical female advantage in life expectancy is not seen in India suggests there are systematic problems with women's health. Indian women have high mortality rates, particularly during childhood and in their reproductive years. But in the study area, the **women's health is converted into wealth** to secure their family.

**Key words: Health, Women workers, work environment.**

## INTRODUCTION

Health is Wealth for all. India is one of the few countries in the world where women and men have nearly the same life expectancy at birth. The fact that the typical female advantage in life expectancy is not seen in India suggests there are systematic problems with women's health. Indian women have high mortality rates, particularly during childhood and in their reproductive years. The health of Indian women is intrinsically linked to their status in society. Research on women's status has found that the contributions that the Indian women make to families often are overlooked, and instead they are viewed as economic burdens. Poor health has repercussions not only for women but also their families. Women in poor health are more likely to give birth to low weight infants. They also are less likely to be able to provide food and adequate care for their children. Finally, a woman's health affects the household economic well-being, as a woman in poor health will be less productive in the labour force<sup>1</sup>.

### 1.1 IMPORTANCE OF HEALTH

Improvement in the health status of the people has been one of the major thrust areas for the social development programs of the country. Over the last five decades, India has built up vast health infrastructure and manpower at primary, secondary and tertiary care in Government, voluntary and private sectors. The population has become aware of the benefits of health related technologies for prevention, early diagnosis, and effective treatment as well as rehabilitation for a wide variety of

<sup>1</sup> Raja Rajan.S.Dr. "A Study on Health indicators and their determinants with reference to India", Language in India www.language inindia.com, Vol. 13, No. 4, April, 2013, pp- 154, 167.

illnesses<sup>2</sup>. Technological advancement and improvement in access to health care technologies, which were relatively inexpensive and easy to implement, had resulted in steep decline in mortality between 1950 and 2010. The extent of access and utilization of health care varied substantially between States, districts and different segments of society<sup>3</sup>.

Health is determined by many factors among which medical care is only one. Indeed, it has become increasingly accepted that medical care is not usually the major determinant of health. Other determinants, such as food, eating, housing conditions and work environment, play equally if not more important roles than medical care. There has also been a growing realisation that very little is known about effectiveness of much of modern medicine. Such evidence that does exist indicates that modern sophisticated techniques are often less effective than the simpler techniques they replace<sup>4</sup>. Health economics reflects a universal desire to obtain maximum value for money by ensuring not just the clinical effectiveness, but also the cost-effectiveness of healthcare provision<sup>5</sup>.

The occupational health in India gained momentum only after the tragic Bhopal gas incident in 1984, though the National Safety Council of India was set up by the Ministry of Labour, Government of India in 1966 and the pioneering effort of ICMR was established in 1911 for the formulation, coordination and the promotion of research. The global prevalence of Musculo Skeletal Disorder ranges from 14 to 42 %. Though India has seen tremendous developments in its economy and industrialization, there is a high incidence of MSD. The prevalence in Northern India has been reported to be as high as 59.4 per cent. Although several possible methods have been employed to determine the prevalence of MSD, the estimates based on health care resource utilization may underestimate its true prevalence and may probably be biased towards the more severe and symptomatic cases. Moreover, the estimates of the prevalence of MSD can also be hindered by the unavailability of the health-care data, inaccuracies in coding, as well as inconsistent physician recognition of the early disease. The limited existing information in the industrial sectors in Southern India stresses the need for estimating the prevalence of MSD in vulnerable sections of the population.

## 1.2 STUDY AREA

Sivakasi, which is called as “A town of three industries”, which is home to Printing / Offset Printing Presses and industries of Pyrotechnics (Fireworks) and Crackers and Safety Matches and Color Matches, was chosen for the study. The 2021-24 Census recorded a population of 3,32,000 (50% males and 50% females). Sivakasi- Mini-Japan, popularly known as mini-Japan possesses multifarious industries like Fireworks, Match Factories, Off-set litho presses which provide employment opportunities to a large mass of people in and around the city. The proud factor and also the noteworthy feature is that people are very industrious, paying attention much to their job. Sivakasi, a quaint little town in Tamil Nadu, is the biggest home to the fireworks industry. About 80% of India's fireworks are manufactured in this small town. Needless to add, almost the entire population of Sivakasi depends on the firework industry. Though the fireworks industry is the lifeline here, several printing press and match box factories here can also be found. All the printing required for the fireworks industry is also carried out here itself. Most of the factories are huge in

<sup>2</sup> Jandhyal B.G, Tilak “Education, Health, Nutrition and Demographic changes: A review of evidence on Asia’, The Journal of Labour Economics, Vol. 35, No. 2, March, 2011, pp-116.

<sup>3</sup> Shariff. A, India Human Development Report, A profile of Indian States in the 1990s, Oxford University Press, 1999, New Delhi.

<sup>4</sup> Adam Wagstaff, The demand for health: theory and applications, Journal of Epidemiology and Community Health, Vol. 40, April, 1986, pp-1.

<sup>5</sup> Alan Haycox, “Health Economics”, Hayward Medical Communications, Hayward, 2009, pp-1101.

size each spread across 30-120 acres in length and employing 1200-1500 people. The industry thrives on manual labour and few processes are automated. The automated processes are carried out by machines run by labourers. Carrying inflammable items is prohibited in the factories and the work goes on from sunrise to sunset. There are, hence, no power supplies in any of the factories and even godowns have not been electrified for fear of fire. Around 75% of the labour force comprises women, most of whom are uneducated. Those associated with the factories claim that work is generally safe since most of the crackers do not need acids. Workers eat bananas as a common antidote to guard against constant exposure to chemicals, mainly aluminum. It is interesting to note that most factories offer a Rs 40 per week, banana allowance. The fireworks industry in Sivakasi is worth between Rs 800-10000 crores. The market for fireworks is likely to grow at the rate of 10% per annum. There are nearly 1070 fireworks factories giving direct employment to about 40,000 workers and about 1 lakh indirect such as paper tube making, wire cutting, box making in the country side. Fireworks in Sivakasi also produce Military Weapons training items. They are used for training in armed forces. Some airports are using Sivakasi rocket to scare away birds to avoid bird hits of aircrafts<sup>6</sup>.

#### **CHEMICALS USED IN CRACKERS AND THEIR HARMFUL EFFECTS**

- Lead : Affects the central nervous system in humans. When heated it can emit highly toxic fumes. Young children can suffer mental retardation and semi-permanent brain damage by exposure to lead.
- Magnesium : Inhalation of magnesium dust and fumes can cause metal fume fever. Particles embedded in the skin produce gaseous blebs and gas gangrene. Dangerous fire hazard in the form of dust or flakes when exposed to flames. Poisoning takes the form of progressive deterioration in the central nervous system.
- Zinc : Pure zinc powder is non-toxic to humans by inhalation but difficulty arises from oxidation (burning), as it emits zinc fumes. It stimulates the sensation of vomiting.
- Manganese : Toxicity caused by dust or fumes. The main symptoms of exposure are languor, sleepiness, weakness, emotional disturbances, spastic gait and paralysis.
- Sodium : When heated in air, it emits toxic fumes of sodium oxide. Can cause dangerous fire hazard when exposed to heat and moisture.
- Potassium : Dangerous fire hazard and explosion can occur.
- Copper : Inhalation of copper dust and fume causes irritation in the respiratory tract. Absorption of excess copper results in "Wilson's disease" in which excess copper is deposited in the brain, skin, liver, pancreas and the myocardium (middle muscular layer in the heart).
- Cadmium : Its absorption can damage the kidneys and can cause anaemia. Cadmium causes increased blood pressure and also a disease called "Itai-Itai", which makes bones brittle resulting in multiple fractures.
- Phosphorous in the form of PO<sub>4</sub> : Dangerous fire hazard when exposed to heat or chemical reaction. Poison by inhalation, ingestion, skin contact and subcutaneous routes. Ingestion affects the central nervous system. Toxic quantities have an acute effect on the liver and can cause severe eye damage.
- Sulphur in the form of SO<sub>4</sub> : It affects the upper respiratory tract and the bronchi. It may cause edema of the lungs or glottis, and can produce respiratory paralysis poison to humans by inhalation. An eye, skin and mucous membrane irritant and corrosive.
- Nitrate : Highly inflammable and on decomposition they emit highly toxic fumes. The symptoms are dizziness, abdominal cramps, vomiting, bloody diarrhea, weakness, convulsions and collapse.

<sup>6</sup> Brief Industrial Profile Virudhunagar District, Government of India, Ministry of MSME, 2012-12, pp-48, 50-55.

- Nitrite : Large amounts taken by mouth may produce nausea, vomiting, cyanosis, collapse and coma. Repeated small doses can cause a fall in blood pressure, rapid pulse, headaches and visual disturbances. When heated, emit highly toxic fumes of NO<sub>x</sub><sup>7</sup>.

### 1.3 STATEMENT OF THE PROBLEM

In Sivakasi the first fireworks industry was started in the early 20th century. Having achieved a measure of success in safety matches, colour matches and star matches. Now, the existing factories broadened their efforts, there came into existence several new units, of which National Fireworks, Kaliswari Fireworks and Standard Fireworks were prominent in the year 1942. These three factories started marketing their products throughout the length and breadth of India. These were later supplemented by new units at the average of 10 per year. What started as 1 or 2 factories in 1923, rose to 3 in 1942, and by the year 1980 the number of factories had risen to 189. By the end of 2020 the total number of registered factories was 1070 in Sivakasi alone.

Sivakasi Fireworks Industries produces around 135 varieties using around six chemicals (aluminum and magnesium powder; potassium, strontium, barium nitrates; potassium chlorate; red phosphorous; zinc oxide; sulphur) as inputs. But it is the aluminum powder that is largely consumed. In the long run, due to synergistic effect of above mentioned chemicals in the presence of excessive heat and lack of ventilation, and improper ergonomic condition, the major occupational health problems which can be expected are many. Common acute occupational illnesses observed are allergic skin diseases, allergic lung disorders, and irritation of eyes with lacrimation, photophobia and conjunctivitis. Long working hours, exposure to excessive heat, low illumination, improper posture, overcrowded working space, continuous sitting in one posture can cause health problems like pain in joints, back pain, body ache, fatigue and other muscle-skeletal problems, resulting in stunted physical growth and development etc. Over and above many work induced psychological problems can't be ruled out. The majority of the remaining population does not understand why the specifically poisonous chemical-mix from fireworks leads for more and more humans to heaviest health impairments and, yes, even to a death threat. Information on this subject is very much needed – and could perhaps influence the one or the other to feel responsible towards his/her neighbours and the environment and to renounce - without waiting for additional legal regulations – to letting-off fireworks altogether. Hence, the researcher wanted to choose the topic as women health status of fireworks workers in Sivakasi.

### 1.4 OBJECTIVES OF THE STUDY

- 1) To study the socio-economic profile of the sample respondents working in fireworks factories in Sivakasi;
- 2) To assess the impact of health hazards of the sample respondents in the study area and
- 3) To offer policy suggestions for the fireworks effluents and provide guidelines to improve their health status in the working environment.

### 1.5 SAMPLE SIZE

Data is collected from the 107 women workers working in the registered fireworks factories in the study area. These 107 women workers are selected by using snow ball sampling technique.

### 1.6 METHODOLOGY

The present study is based on both the primary data and secondary data.

#### Primary Data

The study is mainly based on primary data. The data is derived from the views obtained from the respondents with the help of pre tested interview schedule.

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<sup>7</sup>Aleem.A.M.Dr. , “Health Effects Of Fireworks And Crackers And Safety Tips Of Bursting Of Crackers”, The Journal of Medical Sciences, Vol.13, No.8, Nov, 2010, pp-12-18.

## Secondary Data

The study also depends on the secondary data regarding the history of fireworks factories in India. The secondary data collected from standard text books, journals and websites.

### 1.8 ANALYSIS OF HEALTH STATUS OF FIREWORKS WOMEN WORKERS

#### 1.8.1 OCCUPATIONAL HEALTH

To understand the occupational aspects of health, it is necessary to have a detailed examination of women's work in terms of the actual work involved. The number of hours allotted, the remuneration, if any, and the effects of all these on their nutritional status as well as on their physical and mental health. It is necessary to analyze the types of physical stress experienced. The postural position and their effects and noxious materials used for long hours and inadequate wages together aggravate the occupation and its related health problems of women, are examined.

#### 1.8.2 EFFECTS OF WORKING ENVIRONMENT

The environment that affect the health of working women include the lack of adequate light, insanitation, poor air facility, mostly exposure to the open and unhygienic conditions and so on. Certainly these factors affect the physical and mental health of women. However, it is essential to examine the beneficial protective legislation which favour the health of women. Generally, such bodies will supervise the wages; access to health services, maternity benefits and crèches to look after the children etc. Occasionally fewer are women than men do not work at all. In fact, if women work outside the home, they are consistently working a double shift and when children etc are ill, a triple shift, day after day, women on an average has much longer total hours of work than men.

One third of women are the sole supporters of their families. This aspect has been specified in many research reports. A recent study clearly brings out the contribution of the women workers in the economy of the drought prone areas. The major source of income for women in the drought prone areas was work in the Mahatma Gandhi National Rural Employment Guarantee Scheme. The men usually go on work in private sites. For the same work, women received less than half of what the men received. Yet in 20 per cent of the household women's income constituted at least 50 per cent of the family income. This in effect meant that women worked at least twice as much as the men in economically productive work, and their income was the main contribution to the family's economy.

In addition, the women were also responsible for almost 100 per cent of the housework- "Socially productive labour". They were also responsible for 100 per cent of the "reproductive labour" – the bearing and rearing of the children.

The contribution to society made by the work of women is far greater than that of men. Though fewer women than men, have opportunities to work outside the home, the work which women do within the home – namely cooking, washing and , cleaning, caring for children and the old, nursing the ill, fetching fuel and water, are more heavy burdensome. If women stop doing this household work, all factories, transport, construction, food production and so on will come to a standstill, the disease and hunger will spread and very soon people will start dying. So if we look at the social usefulness of their work alone; it looks as if women ought to have more bargaining power than anyone else, because it is their work which nurtures and sustains the people; but this is not at all the case at present. The fact that women are house-workers itself and their low wages all the more affects their status. Though women-headed households contribute a large proportion to the country. Yet the idea of the working women only "Supplementing" the household economy has become a fixed notion of potential employers. Despite legislation, women continue to be pushed into low-paying categories of jobs, which remain low-paying because they prefer that category of jobs. Instead of enhancing women's status, each of the different aspects of social labour, works against the other roles. This is reflected, among other things, infact many women have to work up to the last day of pregnancy and return to their work within a minimum time prescribed, endangering their own health and also that of their children.

### 1.8.3 Employment and working Condition in study area

The following eleven categories are nature of work in it. They are Bottom and Mud Fixing, Chemical Mixing, Tissue Pasting, Chemical Filling, Fuse Fixing, Charam Wearthing, Jute Winding in Atom Bomb, Pocket Making, Chakkaram Winding, Tube Making and Tip Chemical Filling.

Travelling Allowance, Holiday Facility, Labour Officer Visit, Safety Measures, First Aid Box and Doctor Visit to the unit are the fringe benefit that has been provided by the employer to the sample workers.

The employer also provide some welfare measures to the sample respondents such as, Medical Facility, ESI Facility, Basic Facilities in the work environment, Maternity Benefits, There is no discrimination in wage, Crèche Facility and Insurance Coverage in the study area.

### 1.8.4 Health Status of Sample Women Workers

#### General Health Problem & Respiratory Problem (Multiple Health Problems)

General Health Problems	Respiratory Problems				Grand Total
	Asthma	Sinus	Eosinophilia	Head Ache	
Continuous Cough /Dry Cough	02 (16.6)	05 (41.6)	01 (8.3)	04 (33.3)	12 (11.2)
Back Pain	02 (3.8)	33 (63.4)	04 (7.6)	13 (25.0)	52 (48.5)
Low / High BP	02 (18.1)	05 (45.4)	02 (18.1)	02 (18.1)	11 (10.2)
Neck / Shoulder Pain	03 (9.3)	17 (53.1)	01 (3.1)	11 (34.3)	32 (29.9)
<b>Grand Total</b>	<b>09</b> <b>(8.4)</b>	<b>60</b> <b>(56.0)</b>	<b>08</b> <b>(7.4)</b>	<b>30</b> <b>(28.0)</b>	<b>107</b> <b>(100.00)</b>

Source: Survey Data.

Note: Figures in parentheses are percentages to respective totals.

99.8 per cent of sample workers suffered by often general health problems such as Continuous Cough/Dry Cough, Back Pain, Low/High Blood Pressure and Neck/Shoulder Pain. 48.5 per cent of sample workers affected by back pain. Respiratory problems also affected by sample workers such as Asthma, Sinus, Eosinophilia and Head Ache.

### 1.9 Suggestions

1. The fireworks women workers are poorly nourished, illness complicates this condition further. As food is a significant component for effective recovery, factories should provide free nutritious food to poor women most of whom are on daily wages.
2. Doctors, who are the only source of help for the majority of women, should be taken seriously, as a vital source of rural health care.
3. The National Commission for labour recommends that the community may be motivated to construct and maintain one clean sterilized room in the each and every factory with full of basic medicines.
4. Woman should be involved at the village level as Community Health Guides if women's access to health care is to be improved. Teams comprising one literate and one experienced older women, though not necessarily literate may be the most desirable, both in terms of outreach and accessibility to women. Their training should include both preventive health education and curative care. Mahila Mandals should support these women health workers who have to assist in the maintenance of linkages between the official health care system and village women.

### 1.10. Conclusion

Health is a multi-dimensional and multi-causal variable. Health and development are closely interlinked. It is now established that the poor state of health slows down economic development and that insufficient economic development perpetuates a bad state of health.

Generally, health improvement tends to increase worker productivity and these contribute to economic growth.

Health related problems have become a common phenomenon in the industrialized world. Whatever, preventive measures the workers adopt, it does not help the workers to protect themselves. The present study area of fireworks factories has its own hazardous effect on the workers. In addition to the environmental damages, health is becoming a major problem in this study area.

The researcher found that while visit to the fireworks factories for her data collection, the women workers are not tell their answers face to face. They hear the questions and told the answers by doing their work progress without any trouble. Because every minute is money for them. They don't want to spent time to tell their answers to stop their work for few minutes.

It is very shock to digest that, the fireworks women workers are forced to give financial support to their family. So, they did not bother about the degradation environment, health impact etc. They prefer to earn money to support their family. Also they did not aware of the health conscious. But in the study area, the **women's health is converted into wealth** to secure their family.

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