

## Health Problems of Women Labourers in Fireworks Industries – A Cross Sectional Study



### Commerce

**KEYWORDS :** Health problems among women workers, Women workers and Fireworks industries

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### ABSTRACT

*Women workers engaged in fireworks industry in a particular district of Tamil Nadu, India. Virudhunagar district is a southern district of Tamil Nadu. As far as the Sivakasi Taluk in Virudhunagar district is concerned, crackers making is one of the major unorganized industries. This fireworks industry adds income to the economy. Most of the workers in this industry are women; the production of crackers is mainly lies in the hands of women. The present study focuses on the health problems of women workers in fireworks industries. The following objectives have been framed for the purpose of the study: i) to analyze the health problems of women labourers working in fireworks industries and ii) to suitable suggestion to reduce that problem in the study area. This study based on primary data. Primary data were collected from 300 sample respondents working in fireworks industries using systematic random sampling methods. The data were collected from the period November 2015 to December 2015. The collected data were analyzed with the help of Multi Dimensional Scaling Techniques. At the end of the paper suggestion and conclusion were given.*

### Introduction

Women workers engaged in fireworks industry in a particular district of Tamil Nadu, India. Virudhunagar district is a southern district of Tamil Nadu. As far as the Sivakasi Taluk in Virudhunagar district is concerned, crackers making is one of the major unorganized industries. This fireworks industry adds income to the economy. Most of the workers in this industry are women; the production of crackers is mainly lies in the hands of women. The standard of living of the women workers' family depends on the earning of the women in the family. The increase of production in such industries largely depends on their job satisfaction.

Already, a number of studies have been undertaken to study women workers in different units. The present study focuses on the health problems of women workers in fireworks industries. The women fire workers are illiterate and of poor economic background. The manufacture of crackers involves chemicals, which can be absorbed into the body where it affects the bones and teeth of growing children. Also, younger lungs are more susceptible to irritation and damage from noxious fumes. Sivakasi is known for rural women workers in fireworks industries. The most common reported health problem to labourers employed in the fireworks are related to overexertion, contact with objects or equipment, falls, bodily reaction or exertion, or being struck by an object. As an employer, he should take every possible opportunity to show his labourers that you are committed to health and safety practices by becoming actively involved. The second section deals with the sexual harassment problems among women labourers in fireworks industries are discussed.

A health and safety management system identifies, assesses, eliminates and controls workplace hazards. These systems should reduce the incidence of injury and illness at the workplace. When creating a health and safety management system, the scope and complexity varies depending on the type of workplace and the nature of the work performed. Although health and safety management systems may vary in their content, application and evaluation, their goal is the same – to prevent work-related incidents, injuries, illnesses and fatalities.

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suggestion to reduce that problem in the study area.

The remaining part of the this study is organized as follows: After a brief introduction in Section –I, Data and methodology are outlined in Section – II, Section – III presents the analysis and findings of the study and Section – IV gives conclusion of the study.

### Data and Methodology

This study based on primary data. Primary data were collected from 300 sample respondents working in fireworks industries using systematic random sampling methods. The data were collected from the period November 2015 to December 2015. The collected data were analyzed with the help of Multi Dimensional Scaling Techniques.

### Analysis and Findings of the study

Multidimensional scaling (MDS) is an important analytical tool for the purpose of grouping. In general, the goal of the analysis is to detect meaningful underlying dimensions that allow the researcher to explain observed similarities or dissimilarities (Distances) between the investigated objects. With MDS one may analyze any kind of similarity or dissimilarity matrix.

MDS is a procedure to “rearrange” objects in an efficient manner, so as to arrive at a configuration that best approximates the observed distances. It actually moves objects around in the space defined by the requested number of dimensions, and checks how well the distances between objects can be reproduced by the new configuration. In more technical terms, it uses a function minimization algorithm that evaluates different configurations with the goal of maximizing the goodness-of-fit (or minimizing “lack of fit”). The most common measure that is used to evaluate how well (or poorly) a particular configuration reproduces the observed distance matrix is the stress measure. The raw stress value Phi of a configuration is defined by:

$$\text{Phi} = \sum_{i,j} [\text{dij} - f(\delta_{ij})]^2$$

In this formula, dij stands for the reproduced distances, given the respective number of dimensions, and  $\delta$  ( $\delta_{ij}$ ) stands for the input data (i.e., observed distances). The expression  $(\delta_{ij})$  indicates a non-metric, monotone transformation of the observed input data (distances). Thus, it will attempt to reproduce the general rank ordering of distances between the objects in the analysis.

**Interpreting the Dimensions**

The interpretation of dimensions usually represents the final step of the analysis. As mentioned earlier, the actual orientations of the axes from the MDS analysis are arbitrary, and can be rotated in any direction. Two-dimensional solutions can be illustrated graphically. In this study a list of 17 perceptual factors concerning perception about health problems among fireworks industries labourers, which are weighted in five point scales were taken for MDS analysis. Health problems in fireworks industries generally include the following components:

**TABLE -1**  
**List of perceptual factor taken for analysis**

Factors	Variables
F1	Abdominal pain
F2	Vomiting
F3	Bloating
F4	Intolerance
F5	Back pain
F6	Joint pain
F7	Pain in genitals
F8	Pain during urination
F9	Other lain
F10	Palpitations
F11	Dizziness
F12	Difficulty swallowing
F13	Loss of voice
F14	Deafness
F15	Blindness
F16	Skin problem
F17	Asthma

Iteration history for the 2 dimensional solutions (in squared distances)

Young's S-stress formula 1 is used.

Iteration S-stress Improvement

1	.26570	
2	.21620	.04951
3	.21172	.00448
4	.21155	.00016

Iterations stopped because

S-stress improvement is less than .001000

Stress and squared correlation (RSQ) in distances

RSQ values are the proportion of variance of the scaled data (disparities) in the partition (row, matrix, or entire data) which is accounted for by their corresponding distances. Stress values are Kruskal's stress formula 1.

For matrix

Stress = .20405 RSQ = .82040

The result of the MDS shows that the stress value calculated by Kruskal's stress formula 1 for the matrix is 0.20405 indicating the good fit between data and the RSQ is 0.82040 illustrating that 82.04 percent of variance in the model is explained by the two dimensions health problems among women labourers in fireworks industries.

**Configuration derived in 2 dimensions**

**Stimulus Coordinates**

**Dimension**

**Table-2**

Stimulus	1	2	Stimulus
Number	Name		
1	ABDOMINA		
1.5476	.6327		

2		VOMITING
-.4796	.7906	
3		BLOATING
-.1269	.1512	
4		INTOLERA
-.0010	-.7211	
5		BACKPAIN
2.6407	.0806	
6		JOINTPAI
2.3753	-.7081	
7		PAININGE
.8816	.1176	
8		PAINDURI
-1.1049	.9335	
9		OTHERLAI
.0629	.3464	
10		PALPITAT
-.1755	-.6993	
11		DIZZINES
-1.2246	.1616	
12		DIFFICUL
-1.3413	-.0068	
13		LOSSOFVO
-.9439	-.5801	
14		DEAFNESS
-.8901	-.3161	
15		BLINDNES
-.9916	-.7070	
16		SKINPROB
.4177	-.5109	
17		ASTHMA
-.6463	1.0353	

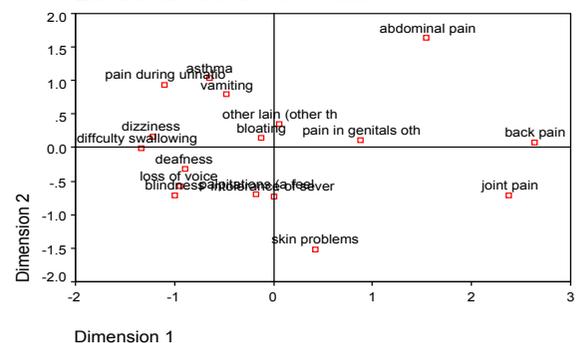
**Source: Computed Data**

Back pain (2.6407) have maximum weightage in dimension -1 at one end and difficulty in swallowing (-1.3413) have least weightage at another end. Maximum of women labourers in fireworks industries are affected by back pain, because of there is no proper seating arrangement facilities for the labourers and difficulty in swallowing is another problem in fireworks those who are working in chemical. Followed by back pain, abdominal pain, joint pain, pain in genitals and skin problems has maximum weightage in dimension -1 and all others are having least weightage. Thus dimension -1 is named as Physical health problems among women labourers in fireworks industries.

On dimension -2, Asthma (1.0353) have maximum weightage at one end and palpitations have least weightage at another end. In dimension -2 except asthma all other problems are having least weightage. Thus dimension-2 is named as Internal health problems among women labourers in fireworks industries.

**Derived Stimulus Configuration**

**Euclidean distance model**



The result of the analysis can be extracted from the Euclidean model in the two dimensional graph. On observation of the two dimensional graph it could be inferred that the

variable like joint pain (F6) and skin problems (F16) are the most important problem among the labourers. . The factors like abdominal pain (F1), back pain (F5) and pain in genitals (F7) also more influencing secondary determinants among the women labourers. The other factors are known to be least health problems among women labourers in fireworks industries.

#### Section – IV Suggestions and Conclusion

This paper concludes that, joint pain and skin problems are the predominant problems among women workers in fireworks industries in the study area. It could be suggest that improvement in working conditions and providing gloves to the women workers those who are working in chemical mixing field can able to reduce the health problems in the study area.

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