

## **HEALTH AND ECONOMIC CONDITION: A STUDY ON TANNERY WORKERS IN AMBUR AND VANNIYAMBADI OF VELLORE DISTRICT**

S. Rita, J. Vignesh Kumar and P. Nivethitha

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**Abstract:** Indian leather industry sixth largest in the world is one of the major established manufacturing industries in the modern as well as traditional sector. Vellore district is a major leather- processing centre in Tamil Nadu, with an estimated 50,000 tannery workers. Stern FB, (2003), Issever *et al.* (2007), Kornhauser C (2002). The district is the top exporter of finished leather goods in the country. Leather production includes many operations with different exposures, which can be harmful for the health of the tannery workers as well as nearby dwellers because many chemicals used in the tanning processes are considered as probably being carcinogenic to humans, IARC (1987) Budhwar R (2005).

The Report of the working group – leather and leather products – 12<sup>th</sup> five year plan makes no mention of any welfare measures for tannery workers, though a plethora of schemes for skilled artisans have been introduced for improvement of their product. The reason behind this probably could be because very less information is available regarding the conditions of the workers in tannery and very little study has been done on the health and economic condition aspects of the tannery workers. Their issues have largely been left unaddressed. Therefore there is a need to study the health and economic conditions which includes health status, educational, and economic status of the tannery workers. The following objectives were framed for this study.

### **Objectives**

- To describe the present health status of the tannery workers
- To analyse the economic condition of the tannery workers
- To suggest some measures to improve their health and economic status

### **Research Methodology**

Descriptive Research Design was adopted for this study. A sample of 300 was collected through Non-Probability Sampling technique. Since the study is about the health status and economic status of tannery workers, collection of data in the tannery was not possible. In order to get the real picture of the workers, the data was collected in the residence of tannery workers through snowball sampling method. A pre-tested semi structured interview schedule was administered to collect the primary data from the respondents. A socio-economic status scale was developed by the O.P. Aggarwal *et al.* (2005). The instrument was validated against the only available and widely used Kuppaswami.S (1981) modified scale of urban population. The secondary data was collected from articles, journals, magazines, etc. The data was analysed using SPSS 19<sup>th</sup> Version. Suitable analyses were done and proper interpretation was given to the results.

### **Findings**

**Keywords:** Socio-Economic Status – Health – Leather Tannery

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### **Introduction**

Industrial wastes are usually generated from different industrial processes, as a result the amount and toxicity of waste released from industrial activities varies with the industrial processes. Again, among all the industrial wastes tannery effluents are ranked as the highest pollutants (Shen, 1999). Because of the relatively inexpensive cost of labor and materials, over half the world's tanning activity occurs in low and middle income countries. At the end the workers working in the tanneries are the victims of all health hazardous since they are working with chemicals.

### **Statement of the Problem**

Indian leather industry sixth largest in the world is one of the major established manufacturing industries in the modern as well as traditional sector. Vellore district is a major leather- processing centre in Tamil Nadu, with an estimated 50,000 tannery workers. Stern FB, (2003), Issever *et al.* (2007), Kornhauser C (2002). The district is the top exporter of finished leather goods in the country. Leather production includes many operations with different exposures, which can be harmful for the health of the tannery workers as well as nearby dwellers because many chemicals used in the tanning processes are considered as probably being carcinogenic to humans, IARC (1987) Budhwar R (2005).

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### **Review of Literature**

Daily information on levels of leather dusts, lead, chromium (VI), nitrogen dioxide, sulphur dioxide, hydrogen sulphide, temperature and relative humidity was collected from tannery accumulated places in Vellore district, which include Vaniyambadi, Ambur, Pernambut, Ranipet and Walajapet during the year 2006-2009, (Schwartz, 1994).

Asthma is characterized by chronic lung disease that inflames and narrows the air ways. The increased air way hyper-responsiveness leading to symptoms of wheeze, shortness of breath, cough, chest tightness and dyspnoea.

About 15% of people in Vellore district are affected by asthma. Males are more affected than Females. Occupational asthma accounts about 5% of adult

onset asthma. Asthma cannot be cured, but it can be controlled. Asthma is still an open issue which has been approached from a clinical perspective where the dominant needs are diagnosis of exacerbations of the disease and treatment. Although acute exacerbations are considered to be the most common cause of hospital admission of asthma patients in age limit between 10 to 65 years and the studies have used the diagnosis labelling stated in medical records. APHEA studies in Europe already showed that a modest increase in asthma admissions related to increases in nitrogen dioxide and sulphur dioxide levels in the atmosphere [Sunyer, 1997].

The whole tannery industrial activity entails a series of tasks which pose threats to the ambient environment and health of working people. The tanning industry causes horrendous environmental pollution and high environmental impact of tannery effluents makes its treatment an essential fact, mainly due to its volume, nature and concentration of pollutants such as tanning agents (chromium and tannin), color, organic matter and others [Mohanta *et al.*, 2010].

According to the WHO, over 8,000 workers in the tanneries of Hazaribag suffer from gastrointestinal, dermatological, and other diseases, and 90% of this population die before the age of 50 [Maurice, 2001].

Hazaribagh area has a high incidence of a number of health problems. In this area the peoples are frequently suffering from abdominal skin ulcer, scabies, discomfort/gastritis, peptic ulcer, lung diseases, respiratory diseases, dermatitis, nasal ulcer/loss of smelling capacity, red eye/other eye illness, running nose, erosion and discolouration of teeth, asthma, puffines of face and oedema, diarrhoeal disease, high fever, conjunctivitis, urinary tract infection, jaundice, hypertension etc. A high number of mentally retarded children have been found, most of them were born in this area (IULTCS, 2004).

### **Objectives**

- To describe the present health status of the tannery workers
- To analyse the economic condition of the tannery workers
- To suggest some measures to improve their health and economic status

### **Research Methodology**

This study describes the health and economic status of tannery workers. Hence Descriptive Research Design was adopted for this study. A sample of 300 was collected through Non-Probability Sampling technique. Since the study is about the health status and economic status of tannery workers, collection of data in the tannery was not possible. In order to get the real picture of the workers, the data was collected in the residence of tannery workers through snowball sampling method. A pre-tested semi structured interview schedule was administered to collect the primary data from the respondents. A socio-economic status scale was developed by the O.P. Aggarwal *et al.* (2005). The instrument was validated against the only

available and widely used Kuppaswami.S (1981) modified scale of urban population. The secondary data was collected from articles, journals, magazines, etc. The data was analysed using SPSS 19<sup>th</sup> Version. Suitable analyses were done and proper interpretation was given to the results.

### Data Analysis

TABLE 1: DEMOGRAPHIC DETAIL OF THE RESPONDENTS

<i>Profile</i>	<i>Labels</i>	<i>Frequency</i>	<i>Percent</i>	
Age	Less than 20 years	17	5.7	
	21-30 years	73	24.3	
	31-40 years	92	30.7	
	41-50 years	84	28.0	
	51-60 years	30	10.0	
	60 years and above	4	1.3	
	<b>Total</b>		<b>300</b>	<b>100.0</b>
Gender	Male	228	76.0	
	Female	72	24.0	
	<b>Total</b>		<b>300</b>	<b>100.0</b>
Educational Qualification	Never been to School	80	26.7	
	Primary	88	29.3	
	High School	120	40.0	
	Higher Secondary	5	1.7	
	Degree	6	2.0	
	Diploma	1	0.3	
	<b>Total</b>		<b>300</b>	<b>100.0</b>
Marital Status	Single	46	15.3	
	Married	252	84.0	
	Separated	2	0.7	
	Divorced	300	100.0	
	<b>Total</b>		<b>300</b>	<b>100.0</b>
Type of Family	Nuclear Family	475	79.2	
	Joint Family	125	20.8	
	<b>Total</b>		<b>600</b>	<b>100.0</b>

### Age Group

Age is one of the important demographic details for this study. Age of the Respondents is classified into less than 20 years, 21-30 years, 31-40 years, 41-50 years, 51-60 years and 60 years and above. The above table reveals that maximum (31%) numbers of respondents are in the age group of 31-40 years. The mean age of the respondents is 37.58 years.

### Gender

Gender is a crucial in a given Indian social situation which is variably affected by any social or economic phenomenon. Hence the variable gender was investigated for this study. The result shows that more than three fourth (76%) of the respondents were males whereas about nearly one fourth (24%) of them were females.

### Educational Qualification of the Respondents

Education is one of the most subtle characteristics to decide about the career and the nature of the job. The above table shows that 40 percent of the respondents were educated up to high school and 29.3 percent of them were educated up to primary level. 26.7 percent of them were never been to school. The numbers of respondents attaining higher education were very few. Most of the respondents working in tanneries are having very low level of educational status.

### Marital Status

Marriage is one of the most important social institutions. The above table shows that overwhelming number of the respondents (84%) was married and remaining 15.3 percent were single. A small percentage reported separated (0.7%).

### Type of Family

The table reveals that a large majority of the respondents (79.2%) were living in nuclear family and remaining (20.8%) were living in joint family. This shows the increasing trends in the changing families from joint family to the nuclear family and the change in family system can be attributed to the process of urbanization, industrialization, migration and modernization.

TABLE 2: TYPE OF TANNERY

<i>Kind of tannery do you work in</i>	<i>Frequency</i>	<i>Percent</i>
Vegetable Tanning	2	0.7
Chrome Tanning	298	99.3
Total	300	100.0

Kind of tannery refers to the type of tannery does the respondents work in whether it is chrome tannery of vegetable tanning. The above table reveals that almost of all the respondents (99.3%) were working in chrome tanneries. Very few (0.7%) of them are working in vegetable tanning. Vegetable tanning requires lot of tree barks and other raw materials; at present situation it is very difficult to get the raw materials. So the tanning industries prefer chrome tanning.

MONTHLY PER CAPITA INCOME

<i>Variable</i>	<i>Labels</i>	<i>Frequency</i>	<i>Percent</i>
Monthly per capita income	Rs.<1000	3	1.0
	Rs.1000-2499	32	10.7
	Rs.2500-4999	194	64.7
	Rs.5000-9999	67	22.3
	Rs.10000-19999	4	1.3
	<b>Total</b>	<b>300</b>	<b>100.0</b>

### Monthly Per capita Income

To assess the economic background of the respondents the information on monthly income of the family members was collected. In other words, if the monthly income of the family is high, then their socioeconomic status is higher and vice versa. Hence, the information collected on the monthly income of the family of the respondents is shown as under. The question was rated on a 7 point scale with scoring from 1 (for those having monthly per capita income less than Rs. 1000 per month) to 7 (for those having monthly per capita income more than Rs. 50000). The above table reveals that 64.7 percent of the respondents were earning of Rs.2500 – 4999 per month, 22.3 percent of them were earning between Rs.5000-9999/- only 10.7 percent of them were earning between Rs. 1000-2499, very few (1.3%) of them were earning Rs. 10000-19999 and 1 percent of them were earning less than Rs.1000/-. This shows that more number of respondents were earning Rs.2500-4999/- per month. Average salary of the respondents was Rs. 4745/-.

TABLE 3: SALARY INCREMENT

<i>Company increase your salary</i>	<i>Frequency</i>	<i>Percent</i>
Once in a year	255	85.0
Once in two years	30	10.0
No increment	2	0.7
Others	13	4.3
Total	300	100.0

The above table refers to the periodical increment of their salary. Majority (85.5%) of the respondents said that company increases their salary once in a year, 10 percent of them responded that once in two years they get salary increment. And very few (0.7 % and 4.3 %) of them said they never get increment and others responses respectively.

TABLE 4: SOCIO-ECONOMIC STATUSES OF THE RESPONDENTS

<i>SES Score</i>	<i>Frequency</i>	<i>Percent</i>
Poor	111	37.0
Lower Middle	181	60.3
Upper Middle	8	2.7
Total	300	100.0

The socio-economic status of the family is divided into six socio-economic categories, namely Upper high (combined score of more than 76), High (61-75), Upper Middle (46-60), Lower Middle (31-45), Poor (16-30) and Very Poor (combined score less than 15). Majority (60.3%) of the respondents are coming under Lower Middle Status, 37 percent of them were coming under poor Socio-Economic Status and only very few (2.7%) of them were coming under Upper Middle Socio-Economic Status.

**Health**

TABLE 5: INTAKE OF ALCOHOL AND HABIT OF SMOKING

<i>Habits</i>		<i>Frequency</i>	<i>Percent</i>
Alcohol	Yes	139	46.3
	No	161	53.7
Smoking	Yes	115	38.3
	No	185	61.7
Total		300	100.0

Respondents were asked about their alcohol consumption and smoking habits. 53.7 percent of them said they never consume alcohol and the remaining (46.3%) said they consume alcohol. 61.7 of them said that they don't have smoking habit and 38.3 percent of them were having smoking habits which will spoil their health.

TABLE 6: DIAGNOSIS OF RESPIRATORY PROBLEMS AND LOW BACK TROUBLE

<i>Identification of respiratory symptoms</i>	<i>Label</i>	<i>Frequency</i>	<i>Percent</i>
Cough most days or nights for at least 3 months in the previous year	Yes	23	7.7
	No	277	92.3
	<b>Total</b>	<b>300</b>	<b>100.0</b>
Cough up phlegm most days or nights for at least 3 months in the previous year	Yes	25	8.3
	No	275	91.7
	<b>Total</b>	<b>300</b>	<b>100.0</b>
<i>Identification of low-back trouble</i>			
You ever had low back trouble (ache, pain or discomfort)	Yes	84	28.0
	No	216	72.0
	<b>Total</b>	<b>300</b>	<b>100.0</b>
You had low-back trouble in the past 12 months	Yes	92	30.7
	No	208	69.3
	<b>Total</b>	<b>300</b>	<b>100.0</b>

The above table reveals about the chronic bronchitis of the respondents. The result shows that 7.7 percent of them said that they have cough most days or nights for at least 3 months in the previous year and 8.3 percent of them said that they have cough up phlegm most days or nights for at least 3 months in the previous year.

The above table describes about the low-back trouble of the tannery workers. The result shows that 28 percent of them were experiencing low back trouble, and 30.7 percent of them having low back trouble in the past 12 months.

Majority (68.7%) of the respondents were having Chief Minister's Comprehensive Health Insurance Scheme Card (CMCHISTN) where they have get free health insurance services, and only 34.3 percent of them were having the benefit of ESI (Employee State Insurance) benefits. 30.3 percent of them are coming under BPL category.

TABLE 7: POSSESSION OF CHIEF MINISTER'S COMPREHENSIVE HEALTH INSURANCE SCHEME CARD (CMCHISTN), ESI BENEFICIARY, BPL CARD

	<i>Label</i>	<i>Frequency</i>	<i>Percent</i>
Chief Minister's Comprehensive Health Insurance Scheme Card (CMCHISTN)	Yes	206	68.7
	No	94	31.3
	<b>Total</b>	<b>300</b>	<b>100.0</b>
ESI Beneficiary	Yes	103	34.3
	No	197	65.7
	<b>Total</b>	<b>300</b>	<b>100.0</b>
Possession of BPL Card	Yes	91	30.3
	No	209	69.7
	<b>Total</b>	<b>300</b>	<b>100.0</b>

**H<sub>0</sub>: There is no significant difference between Gender and SES Score & Monthly Income of the respondents.**

TABLE 8: Z-TEST BETWEEN GENDER OF THE RESPONDENTS WITH REGARD TO SES SCORE &amp; MONTHLY INCOME

<i>S.No</i>	<i>Label</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Statistical Inferences</i>	
1.	SES Score	Male	228	32.37	5.334	Z = 1.583 p = > 0.115 <b>Significant</b>
		Female	72	31.21	5.775	
2.	Monthly Income	Male	228	4971.71	1357.464	Z = 5.169 p = 0.000 <b>Significant</b>
		Female	72	4029.17	1320.525	

Z - test was conducted to find the difference between Male and Female with regard to Socio-Economic Status Score. The test result reveals that there was no significant difference between Male (M=32.37, SD=5.334) and Female (M=31.21, SD=5.77) with regard to Socio-Economic Status Score. It can be inferred that Males and Females are having same SES score. Hence null hypothesis accepted.

The test result for Gender and Monthly Income of the Respondents shows that there was a significant difference between Male (M=4971.71, SD=1357.464) and Female (M = 4029.17, SD=1320.525) with regard to Monthly Income of the respondents. Hence null hypothesis rejected. It can be inferred that Males are getting more wages than Females. This shows that there is wage discrimination among Males and Females.

**H<sub>0</sub>: There is no relationship between Experience and Socio-Economic Status Score**



TABLE 9: CORRELATION BETWEEN EXPERIENCE AND SOCIO-ECONOMIC STATUS SCORE

		<i>Correlations</i>		
		<i>Experience</i>	<i>SES Score</i>	<i>Monthly income</i>
Experience	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	300		
SES Score	Pearson Correlation	.038	1	
	Sig. (2-tailed)	.507		
	N	300	300	
Monthly income	Pearson Correlation	.173**	.173**	1
	Sig. (2-tailed)	.003	.003	
	N	300	300	300

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation coefficient was computed to assess the relationship between Experience, Socio-Economic Status Score and Monthly Income of the respondent. The result shows that there was a positive correlation at the 1% level between Experience and Monthly Income ( $r = 0.173$ ,  $p = 0.003$ ). There is no correlation between Experience and Socio-Economic Status ( $r = 0.038$ ,  $p = 0.507$ ). There is a relationship between Socio-Economic Score of the respondent and Monthly Income of the Respondents. Overall it can be inferred that as the Experience and Monthly Income increases. When the experience increases the Socio-Economic Status will not increase. Therefore, SES has to be increased to have good life. Leather tannery workers should get a better salary to improve their Socio-Economic Status.

### Findings

- Maximum (31%) numbers of respondents are in the age group of 31-40 years. The mean age of the respondents is 37.58 years.
- Three fourth (76%) of the respondents were males
- 40 percent of the respondents were educated up to high school
- 84 percent of the respondents were married
- majority of the respondents (79.2%) were living in nuclear family
- (99.3%) were working in chrome tanneries
- 64.7 percent of the respondents were earning of Rs.2500 – 4999 per month
- Majority (85.5%) of the respondents said that company increases their salary once in a year
- Majority (60.3%) of the respondents are coming under Lower Middle Status
- (46.3%) said they consume alcohol.

- 38.3 percent of them were having smoking habits which will spoil their health.
- 7.7 percent of them said that they have cough most days or nights for at least 3 months in the previous year and 8.3 percent of them said that they have cough up phlegm most days or nights for at least 3 months in the previous year.
- The result shows that 28 percent of them were experiencing low back trouble, and 30.7 percent of them having low back trouble in the past 12 months.
- Majority (68.7%) of the respondents were having Chief Minister's Comprehensive Health Insurance Scheme Card (CMCHISTN)
- 34.3 percent of them were having the benefit of ESI (Employee State Insurance) benefits.
- 30.3 percent of them are coming under BPL category
- There was no difference between gender and SES Score. The result reveals that Males and Females are having same SES score.
- There was a significant difference between Gender and Monthly Income. The result shows that Males are getting more wages than Females.
- There was a positive relationship between Experience and Monthly Income.

#### **Suggestions**

- Salary increment will improve their socio-economic status of the workers, and they need better job and regular wage. Permanent job will give job security to the workers.
- Periodical health check-up should be compulsory for all the workers working in tanneries.
- Priority should be given to tannery workers for the government schemes and benefits
- Create awareness about health conscious and hygienic work environment

#### **Policy Implication**

Based on the present research, the following policy implications could be highly recommended to the policy makers for the implementation of welfare of the tannery workers.

#### **Health**

The present study suggests that exposure to chemical compounds may cause an increase in dermatitis, asthma-related symptoms, etc. In order to prevent respiratory disorders among tannery workers, we suggest that medical observation, including pre-employment and periodic medical controls, should be performed and should

include pulmonary function tests. This medical screening can protect workers from developing chronic respiratory disorders by allowing the early recognition of respiratory obstruction and then, possibly, the removal of sensitive workers from that area of the workplace before chronic impairment develops.

### **Economic**

Since nearly one third of the respondents are coming under Below Poverty Line, focus should be made on family's alternative income generation and poverty alleviation should be seriously addressed at various levels with involvement of Central and State Governments and non-governmental organizations. Since more number of respondents are earning between Rs.2500 – 4999 per month which is not sufficient to lead a good life. Therefore the tannery owners should give a better salary for the workers.

### **Conclusion**

Through this study, an attempt has been made to understand the health and economic condition of tannery workers in Ambur and Vanniyambadi, Vellore District. The leather tanning industry and leather related industry give employment and business opportunities for many people. The rising cost of living compels the tannery workers to take up the job. The tannery workers are exposed to lot of chemicals for low wages.

The results of the study reveal that there is a need to improve the health condition and health needs of the tannery workers. Protective measures should also be provided to reduce the various morbidities. Health status of the workers is more important for economic production of the industry and also in developing good socio economic status for the worker's family. It is necessary for the health care provider, various stakeholders to identify such factors, thus the monitoring and care provided can be improved.

Their socio-economic status will be improved only if adequate measures are taken to overcome their problems. The state and central government can formulate suitable policies to increase the welfare of the workers. This study helps to suggest increasing the socio-economic conditions of workers in leather tanning industry.

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