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### Health Profile of Employees working in automobile industry-A cross sectional study

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#### A B S T R A C T

Due to increased urbanization and industrialization there was rise in non-communicable diseases in developing country like India. There is also increased stress and due to migration and loneliness there is increased addiction for alcohol and tobacco. Therefore the study was conducted to see the health profile of employees working in an automobile company. There were total 316 employees and 297 were willing to participate in the study. Each employee was subjected to detailed clinical examination and relevant investigations. Mean age of employees was  $26.2 \pm 6.7$  Yrs. 62.5% of employees complained of backache during clinical examination. Addiction for alcohol and smoking was present in 51.85% of employees. 24.24% of the employees were suffering from obesity. 18.5% were hypertensives whereas 5% of them were suffering from Diabetes Mellitus. Nearly half of employees (45.7%) were suffering from refractive error. 6.4% of employees were suffering from hearing problems. Addiction, Ocular morbidity, Diabetes Mellitus, Hypertension and Musculo-skeletal disorders were the major problems among workers. Health education regarding quitting of addiction and regular and appropriate exercise for Diabetes and Hypertension should be advised.

### Introduction

The Indian Morbidity and Mortality in industrialized workers is changing drastically due to recent industrialization and globalization (Agnihotram, 2005). The new diseases and especially non-communicable diseases like – cancers, stress, AIDS, geriatrics, Psychological disease, Diabetes mellitus and heart diseases

are on the rise. With these changes the workers working in low resource availability are more likely to be affected by the dangers of high technology than their counterparts in developed countries. There is also great impact on hearing and vision among industrial workers. Exposure to excessive noise is the major avoidable cause of

permanent hearing impairment. Worldwide, 16% of the disabling hearing loss in adults is attributed to occupational noise (Nandi and Dhatraj, 2008).

The size of automotive service market in India is estimated at 8-10 billion USD. It is also estimated that 50% of this sector is unorganized (Bhaskar, 2013). This service sector is more prevalent in rural areas with less facility and lack of knowledge about safety measures as compare to urban areas (Pradeep *et al.*, 2015). In India, traditionally, Agriculture is the backbone of Indian economy. But in recent years there is more urbanization and industrialization and hence migration of labour workers also increased. With these migration of labour workers far away from their home, the habits like alcoholism, smoking and tobacco chewing is also increased due to various factors like loneliness, peer pressure etc. As India is in a transition phase between developing to developed countries the occurrence of non-communicable diseases are on the rise.

Hence, a study was undertaken to know the health status of industrial workers working in an automobile industry.

## **Materials and Methods**

A cross-sectional study was done through health check up camp conducted in an automobile industry, which manufactures engine parts of automobile vehicles. The study was conducted in June 2014. The permission from appropriate industrial authorities was taken to conduct a health camp.

There were 316 workers working at the factory and out of that 297 consented for health check up and were included in the study. The data was collected in a pre-designed, pre-tested questionnaire after

taking written informed consent from employees.

The workers were approached at their respective units during working hours.

The health check up of the employees was done at the industry itself in a separate room which was sound proof and well ventilated. Each worker was subjected to the interview and a detail medical evaluation was done.

The following data was collected –

1. The socio demographic data included in the study were - Age, sex, literacy status, marital status, Socio-economic status etc.
2. Health check-up -Routine clinical examination was done to – Physical examination, Oral and gum problems, Nutritive status of employees according to BMI and systemic illnesses.
3. Lab examination were done for – Blood sugar level and Haemoglobin estimation.

The socio-economic status was taken according to modified BG Prasad classification (Rao, 2002).

Detailed health examination of employees was done. Blood pressure was measured after advising the worker to take rest for 10 minutes using sphygmomanometer. An ophthalmic evaluation was done using snellen's chart to know the refractive errors and other ocular morbidities. Expert opinion was also taken from ENT surgeon for any hearing abnormalities.

Each of the study participants were investigated for their blood sugar level (by using one touch simple select glucometer instrument) and haemoglobin by (Sahli's method).

Exclusion criteria - Not willing to participate in the study.

Ethical permission – Ethical permission was taken from institutional ethics committee.

### **Operational definitions**

#### **Diabetes Mellitus**

Random blood sugar levels was done for each employee and diabetes mellitus was defined as a level of > 200 mg/dl as per WHO definition ([http://www.who.int/diabetes/publications/en/screening\\_mnc03.pdf](http://www.who.int/diabetes/publications/en/screening_mnc03.pdf)).

#### **Hypertension**

Estimated with Sphygmomanometer and a level of -

Systolic -  $\geq 140$  mmHg, Diastolic -  $\geq 90$  mm Hg was labelled as hypertension (<http://applications.emro.who.int/dsaf/dsa234.pdf>).

BMI (<http://www.vepachedu.org/TSJ/BMI-Guidelines.pdf>) – Calculated by considering height (Mtrs) and weight (Kg) by using following formula.

$$\text{BMI} = \text{Weight (Kg)} / \text{Height (Mtr)}^2$$

### **Results and Discussion**

The total number of employees examined was 297. All were male employees. The socio-demographic profile of the employees is shown in table 1.

Majority of participants, 272 (91.6%) belong to 21–40 years, the mean age being  $26.2 \pm 6.7$  years. More than 2/3<sup>rd</sup> 240(80.8%) of the participants were Hindus, majority were studied up to secondary or diploma (ITI) level education and while 76.4% of the participants were unmarried as major force is < 30 years of age. More than 80% of the

participants belong to class II and III of socioeconomic status as per Modified B.G. Prasad classification (Rao, 2002).

Out of the 297 participants, 250(84.2%) were fresher or have experience less than 5 years in the industry.

Majority (62.5%) of the employees were complaining of backache (Table 2).

Out of the total 297 participants, half 154(51.5%) of the participants gave history of addiction and 54(18.2%) were addicted to both smoking and alcohol (Table 3).

Weight and height of all participants were recorded and according to BMI their nutritional status was determined (Table 4). Out of 297, 117(39.4%) participants were either over weight or were having obesity. Prevalence of obesity was 24.2% and that of underweight was 11.8 %.

When all the participants were examined by trained doctors, following morbid conditions were detected (Table 5). The prevalence of hypertension was 18.5% while that of diabetes mellitus was 5%. Majority 136(45.7%) of the participants had refractive errors, out of which 110(37.0%) have the refractive error for far vision, 10(3.4%) for near vision and 16(5.4%) for both vision. The employees were also screened for colour blindness using Ishihara chart and 4 employees were found to be colour blind, 3(1.0%) had red and green colour blindness and 1(0.3%) was suffering from green colour blindness. Anaemia was present in 3% of cases. Varicose veins were found in 2(0.7%) participants while dental caries were present in 13.8% cases. Skin problems like dust allergy and other types of skin allergy were present in 4.7% cases and hearing defects by tuning fork was detected in 6.4% cases. Musculoskeletal problems

like upper backache, lower backache, pain in legs, pain in knee joints, pain in neck was detected in 30(10.1%) cases.

Service sector in Indian industrial growth has obtained significant numbers. Automobile service industry is one of the largest in the world. Majority of employees

were younger because of factories policy of recruiting young temporary employees. Majority was studied up to secondary or diploma level education and 84.2% of the participants was either fresher or have experience less than 5 years. These findings go hand in hand with the study conducted by Evangelos C. Alexopoulos *et al.* (2015).

**Table.1** Socio-Demographic Profile of employees (N=297)

Characteristics		Frequency (%)
<b>1) Age(Years)</b>	≤ 20	9 (3.0)
	21-30	245(82.5)
	31-40	27(9.1)
	41-50	11(3.7)
	51-60	2(0.7)
	> 60	3(1.0)
<b>2) Educational status</b>	Illiterate	5(1.7)
	Primary	5(1.7)
	Secondary	44(14.7)
	Diploma	214(72.1)
	Graduation	29(9.8)
<b>3) Marital status</b>	Married	67(22.6)
	Unmarried	227(76.4)
	Widowed	2(0.7)
	Divorcee/separated	1(0.3)
<b>4) Socioeconomic status</b>	Class I	38(12.8)
	Class II	107(36.0)
	Class III	135(45.5)
	Class IV	15(5.0)
	Class V	2(0.7)
<b>5) Length of service(Years)</b>	0-<5yrs	250(84.2)
	5-<10 yrs	30(10.0)
	10-<15 yrs	10(3.4)
	>15 yrs	7(2.4)

**Table.2** Distribution of employees according to their Presenting complaints

Presenting complaints of employees	Number (%)
Mouth and gum problems	2(4.17)
Backache	30(62.5)
Chest complaints	9(18.75)
Skin disorders	2(4.17)
Eye disorders	5(10.41)
<b>Total</b>	<b>48(100)</b>

**Table.3** Distribution of employees Addictions among employees

Addiction	Number (%)
Drinkers	65(21.89)
Smokers	15(5.05)
Both drinkers and smokers	54(18.18)
Tobacco chewers	20(6.73)
No addiction	143(48.15)
<b>Total</b>	<b>154(100)</b>

**Table.4** Distribution of employees according to Nutritional status

Nutritional status	Number (%)
Normal	145(48.82)
Over weight	45(15.15)
Obese	72(24.24)
Under weight	35(11.79)
<b>Total</b>	<b>297(100)</b>

**Table.5** Morbid conditions of the employees

Morbid conditions	Number (%) (n=297*)
Hypertension	55(18.5)
Diabetes Mellitus	15(5.0)
Ocular morbidity	136(45.7)
Anaemia	9(3.0)
Varicose veins	2(0.7)
Dental caries	41(13.8)
Musculoskeletal problems	30(10.1)
Skin problems	14(4.7)
Gastrointestinal problems	3(1.1)
Respiratory problems	3(1.1)
Hearing defects	19(6.4)
Injuries	2(0.7)

\*- multiple responses

Majority (62.5%) of the employees were presented with backache and other musculoskeletal problems. In a study conducted on 106 workers in urban area of Vellore district, reported symptom of musculoskeletal problem in 44.3% of cases (Philip *et al.*, 2014).

This may be due to awkward posture of workers for long time. More than half 154(51.5%) of the participants gave history

of addiction. This might be due to the workers are residing away from their family or due to stress at the work place. This need to be addressed by counseling and referring chronic addicted employees to de-addiction centre. It was observed that Prevalence of obesity was 24.2% and that of underweight was 11.8%. As majority of workers are away from their families and having food at the mess facility of the industry there are chances of malnutrition. In the study

conducted by Pravin and Jogdand (2001), obesity was seen in 38.7% of employees. Morbidity profile of workers showed that prevalence of hypertension was 18.5% while that of diabetes mellitus was 5%. This finding was lesser than the study done at Chennai and Gujarat, Which showed the prevalence of hypertension in their study as 32.14% and 27.2% and the prevalence of diabetes in their study as 25.6% and 16.3% respectively (Pravin and Jogdand, 2001; WHO, 2006).

Majority 136(45.7%) of the participants had refractive errors. However, the findings were lower in present study than the study conducted by Titiyal *et al.* (1998) which showed refractive errors among employees as 56.7%. Anaemia was present in 3% of cases. Although, the study conducted by Pradeep *et al.* (2015), the prevalence of anaemia was found to be 11.7%. Varicose veins were found in 2(0.7%) participants while dental caries were present in 13.8% cases. Skin problems like dust allergy and other types of skin allergy were present in 4.7% cases and hearing defects by tuning fork was detected in 6.4% cases.

### **Conclusion and Recommendations**

Addiction, Ocular morbidity, Diabetes Mellitus, Hypertension and Musculo-skeletal disorders were the major problems among workers. Health education regarding quitting of addiction and regular and appropriate exercise for Diabetes and Hypertension should be advised.

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