CHAPTER VI

ANALYSIS II - EXPOSURE AND HEALTH PROBLEMS

An industrial worker spends minimum of 8 hours per day in the industrial environment and about 200 hours a month, excluding the overtime he might put in. Thus out of 24 hours available to a worker per day, he spends 33.33% of his time in the work environment apart from his time spent in eating, sleeping (resting) and personal hygiene. The work environment might not be conducive to a healthy life. This might, over a period of time spread in years, develop into a disease or a symptom. On one hand efficiency in work is possible only when an employee is healthy, on the other the industry in which he is employed exposes him to certain hazards which he would not meet elsewhere and which may affect his health.

TABLE 6.1

BACK PROBLEM AND YEARS WORKED

Health Problem	Years worked						Total
	0-5 years		6-10 years		Above 10 yrs		Number of
Back	N	%	N	%	N	%	respondents
Sufferers	23	26.43	18	22.22	87	30.85	128
Nonsuffer-ers	64	73.57	63	77.78	195	69.15	322
Total	87	100.0	81	100.0	282	100.0	450

Table 6.1 shows the problem of back infirmity among the respondents of various industries. It is observed that back problem affects on average more than one-fourth of the workers among all three exposed groups. It is high in the initial years and a little more after 10 years of exposure (Fig.5.1b).

TABLE 6.2

NECK PROBLEM AND YEARS WORKED

Health Problem Neck	Years worked						Total Number of respondents
	0-5 years		6-10 years		Above 10 years		
	N	%	N	%	N	%	
Sufferers	10	11.49	17	20.98	48	17.02	75
Nonsuffer-ers	77	88.51	64	79.02	234	82.98	375
Total	87	100.0	81	100.0	282	100.0	450

The above table shows the neck infirmity among the respondents relating their years worked in industries. It is clear that neck problem is slightly high among those who are exposed in the group of 6-10 years (Fig.5.2.b)

TABLE 6.3

SHOULDER PROBLEM AND YEARS WORKED

Health problem Shoulder	Years worked						Total Number of respondents
	0-5 years		6-10 years		Above 10 years		
	N	%	N	%	N	%	
Sufferers	16	18.39	19	23.45	60	21.27	95
Non-sufferers	71	81.61	62	76.55	222	78.73	355
Total	87	100.0	81	100.0	282	100.0	450

As seen more shoulder problem is experienced in exposure group of 6-10 years compared to other two groups (Fig.5.3.b)

TABLE 6.4

HAND PROBLEMS AND YEARS WORKED

Health problem Hands	Years worked						Total Number of respondents
	0-5 years		6-10 years		Above 10 years		
	N	%	N	%	N	%	
sufferers	12	13.79	17	20.99	74	26.24	103
Non-sufferers	75	86.21	64	79.01	208	73.76	347
Total	87	100.0	81	100.0	282	100.0	450

It is clear that hand infirmity is slightly high among those working for more than 10 years (Fig.5.4.b).

TABLE 6.5

LOWER LIMB PROBLEM AND YEARS WORKED

Health Problem Lower Limb	Years worked						Total Number of respondents
	0-5 years		6-10 years		Above 10 years		
	N	%	N	%	N	%	
Sufferers	24	27.59	32	39.51	129	45.74	185
Non-sufferers	63	72.41	49	60.43	153	54.26	265
Total	87	100.0	81	100.0	282	100.0	450

Table 6.5 shows that the level of lower limb problem increases with more years of exposure to working environment (Fig.5.5.b).

TABLE 6.6

RESPIRATORY PROBLEM AND YEARS WORKED

Health problem Respiratory system	Years worked						Total Number of respondents
	0-5 years		6-10 years		Above 10 years		
	N	%	N	%	N	%	
Sufferers	14	16.09	19	23.46	94	33.33	127
Non-sufferers	73	83.91	62	76.54	188	66.67	323
Total	87	100.0	81	100.0	282	100.0	450

The respiratory system infirmity increases with years of exposure and is highest among workers exposed for more than 10 years (Fig.5.6.b).

TABLE 6.7

CARDIOVASCULAR PROBLEM AND YEARS WORKED

Health problem Cardiovascular system	Years worked						Total Number of respondents
	0-5 years		6-10 years		Above 10 years		
	N	%	N	%	N	%	
Sufferers	9	10.34	10	12.35	52	18.44	71
Non-sufferers	78	89.66	71	87.65	230	81.56	379
Total	87	100.0	81	100.0	282	100.0	450

Table shows 6.7 that the level of cardiovascular problem is low in all the groups (Fig.5.7.b).

TABLE 6.8

NERVOUS SYSTEM PROBLEM AND YEARS WORKED

Health problems- Nervous system	Years worked						Total Number of respondents
	0-5 years		6-10 years		Above 10 years		
	N	%	N	%	N	%	
Sufferers	6	6.89	11	13.58	52	18.43	69
Non-sufferers	81	93.11	70	86.42	230	81.57	381
Total	87	100.0	81	100.0	282	100.0	450

TABLE 6.9

GASTRO-INTESTINAL PROBLEM AND YEARS WORKED

Health problem	Years worked						Total
Gastro-intestinal system	0-5 years		6-10 years		Above 10 years		Number of respondents
	N	%	N	%	N	%	
Sufferers	4	4.596	13	16.04	42	14.89	59
Non-sufferers	83	95.41	68	83.96	240	85.11	391
Total	87	100.0	81	100.0	282	100.0	450

Table 6.9 shows that the level of gastro-intestinal problem is low irrespective of the number of years worked (Fig.5.9.b).

TABLE 6.10

EYE PROBLEM AND YEARS WORKED

Health problem	Years worked						Total
Eyes	0-5 years		6-10 years		Above 10 years		Number of respondents
	N	%	N	%	N	%	
Sufferers	29	33.33	39	48.24	153	54.26	221
Non-sufferers	58	66.67	42	51.86	129	45.74	229
Total	87	100.0	81	100.0	282	100.0	450

The eye problem gradually increases with more years of exposure (Fig.5.10.b).

TABLE 6.11

EAR PROBLEM AND YEARS WORKED

Health problem Ears	Years worked 0-5 years N	%	6-10 years N	%	Above 10 years N	%	Total Number of respondents
Sufferers	11	12.64	13	16.04	46	16.31	70
Non-sufferers	76	87.35	68	83.96	236	83.69	380
Total	87	100.0	81	100.0	282	100.0	450

It is clear that ear problem is low among all three groups (Fig. 5.11.b)

TABLE 6.12

SKIN PROBLEM AND YEARS WORKED

Health problem Skin	Years worked 0-5 years N	%	6-10 years N	%	Above 10 years N	%	Total Number of respondents
Sufferers	8	9.19	20	24.69	76	26.95	104
Non-sufferers	79	90.81	61	75.31	206	73.05	346
Total	87	100.0	81	100.0	282	100.0	405

Skin problem is slightly high among those exposed for 6-10 years and above 10 years to their work environment (Fig.5.12.b).

TABLE 6.13

NOSE PROBLEM AND YEARS WORKED

Health problem Nose	Years worked						Total Number of respondents
	0-5 years		6-10 Years		Above 10 years		
	N	%	N	%	N	%	
Sufferers	23	26.44	20	24.69	119	42.19	162
Non-sufferers	64	73.56	61	75.31	163	57.82	288
Total	87	100.0	81	100.0	282	100.0	450

It is seen that nose problem is high among all groups exposed. More nose problem is experienced in those exposed for more than 10 years (Fig.5.13.b).

TABLE 6.14

SLEEP PROBLEM AND YEARS WORKED

Health problem Sleep	Years worked						Total Number of respondents
	0-5 years		6-10 years		Above 10 years		
	N	%	N	%	N	%	
Sufferers	34	39.08	23	28.39	145	51.47	202
Non-sufferers	53	60.92	58	71.60	137	48.59	248
Total	87	100.0	81	100.0	282	100.0	450

The problem of sleep is high in initial years, and is very high among those who are exposed for more than 10 years (Fig.5.14.b)

TABLE 6.15

ASTHMA PROBLEM AND YEARS WORKED

Health problem	Years worked						Total
	0-5 years		6-10 years		Above 10 years		Number of
Asthma	N	%	N	%	N	%	respondents
Sufferers	11	12.64	7	8.64	65	23.04	83
Non-sufferers	76	87.36	74	91.36	217	76.96	367
Total	87	100.0	81	100.0	282	100.0	450

Table 6.15 shows asthma problem and years of exposure. It is evident that this problem increases with the years of exposure (Fig.5.15.b)

TABLE 6.16

STRESS PROBLEM AND YEARS WORKED.

Health problem	Years worked						Total
	0-5 years		6-10 years		Above 10 years		Number of
Stress	N	%	N	%	N	%	respondents
Sufferers	52	59.77	50	61.72	184	65.24	286
Non-sufferers	35	40.23	31	38.28	98	34.76	164
Total	87	100.0	81	100.0	282	100.0	450

Stress problem is high from the initial years of working and gradually increases with increased years of exposure (Fig.5.16.b).

TABLE 6.17

HEALTH PROBLEMS AND YEARS WORKED

Health Problems	Years of Exposure 0-5 years (%)	6-10 years (%)	Above 10 years (%)	Total Number of sufferers
Back	17.9	14.1	67.9	128
Neck	13.33	22.67	64.0	75
Shoulder	16.84	20.0	63.12	95
Hands	11.65	16.50	71.35	103
Lower Limb	12.97	17.29	69.72	185
Respiratory	11.02	14.69	74.02	127
CVS	12.68	14.08	73.23	69
Nervous system	8.69	15.94	75.36	69
GIS	6.78	22.0	71.19	59
Eyes	13.22	17.64	69.23	221
Ears	15.71	18.57	65.71	70
Skin	7.69	19.23	73.08	104
Nose	14.19	12.35	73.46	162
Sleep	16.83	11.39	71.88	202
Asthma	13.25	8.43	78.31	83
Stress	18.18	17.48	64.33	286

Note: CVS = Cardiovascular system; GIS=Gastro-intestinal system.

The general trend that is observed (Table 6.17) is that in the first group of 0-5 years of exposure, problems like stress, back, sleep, asthma are slightly high, other problems are low. During 6 to 10 years of exposure there is seldom any significant increase in the problems. However, after 10 years, the situation seems to deteriorate. Thus with more years of exposure the intensity of most of the health problems becomes more severe. Persons working for longer periods of time are subject to greater degree of suffering.

The infirmities that appear to increase significantly with increasing years of exposure, as evident from the statistical analysis, are those of the lower limbs, hands, respiratory system, cardio-vascular system, nervous system, eyes, skin, nose, sleep and asthma.

The results of the F-test shown in Tables 6.18 to 6.33 further help to emphasise the association between exposure and health problems encountered by industrial workers.

TABLE 6.18

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	1.5000	.7500	.8406	.4321
Within Groups	447	398.8458	.8923		
Total	449	400,3458			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	96 Pct Conf Int for Mean
Grp 1	87	1.6621	.9833	.1054	1.0000	5.0000	1.4525 TO 1.8716
Grp 2	81	1.7148	1.0086	.1121	1.0000	5.0000	1.9378
Grp 3	282	1.8021	.9132	.0544	1.0000	5.0000	1.9092
Total	450	1.7593	.9443	.0445	1.0000	5.0000	1.6719 TO 1.8468

Multiple Range Test

Scheffe Procedure
Ranges for the .050 level -

3.47 3.47

The ranges above are table ranges.
The value actually compared with Mean (J)-Mean(I) is..
.6679 *Range * Sqrt(1/N(I) + 1/N(J))

No two groups are significantly different at the .050 level

The above table shows the association between back problem and years worked.

The scheffe procedure in the above table indicates that no two groups are significantly different at 0.50level.Thus, it can be concluded that back problem is more or less same in all groups irrespective of exposure years.

TABLE 6.19

Varible D NECK NECK
By Variable Yearswor Years worked

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	2.9553	1.4776	1.7350	.1776
Within Group	447	380.6976	.8517		
Total	449	383.6529			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.4908	.7675	.0823	1.0000	4.0000	1.3272 To 1.6544
Grp 2	81	1.7543	1.0603	.1178	1.0000	5.0000	1.5199 To 1.9888
Grp 3	282	1.6379	.9244	.0550	1.0000	5.0000	1.5296 To 1.7463
Total	450	1.6304	.9244	.0436	1.0000	5.0000	1.5448 To 1.7161

Multiple Range Test
Scheffe Procedure
Ranges for the .050 level -

3.47 3.47

The ranges abnove are table ranges.
The value actually compared with Mean(J) Mean (I) is..
.6526 *Range *Sqrt(1/N(I) + 1/N(J))

No two groups are significantly different at the .050 level

The above table shows the association between neck problem and years worked.

It is seen that no two groups are signifacantly different at 0.50 level of confidence.Thus, it can be concluded that in all the groups of years worked, the severity of neck problem is more or less same.

TABLE 6.20

Variable E Shoulder
By Variable Years worked

Analysis of variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	.6950	.3475	.2839	.7530
Within groups	447	547.1636	1.2241		
Total	449	547.8586			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.6184	1.1000	.1179	1.0000	5.0000	1.3840 To 1.8528
Grp 2	81	1.7259	1.1668	.1296	1.0000	5.0000	1.4679 To 1.9839
Grp 3	282	1.7149	1.0906	.0649	1.0000	5.0000	1.5871 To 1.8427
Total	450	1.6982	1.1046	.0521	1.0000	5.0000	1.5959 To 1.8006

Multiple Range tEst

Scheffe Procedure
Ranges for the .050 level -
3.47 3.47

The ranges above are table ranges.
The value actually compared with Mean (J) - Mean (I) i.e.
.7823 * Range * Sqrt(1/N(I) + 1/N(J))

No two groups are significantly different at the .050 level.

The above table shows the association between shoulder problem and years worked.

The Scheffe Procedure shows the no two groups are significantly different at the 0.05 level of confidence. This means that shoulder problem is more or less same in all the three groups of years worked.

TABLE 6.21

Variable F Hands
By Variable Years worked

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Ratio
Between Groups	2	13.1828	6.5914	5.4358	.0047
Within Groups	447	542.0274	1.2126		
Total	449	555.2102			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.4540	.7542	.0809	1.0000	4.0000	1.2933 To 1.6148
Grp 2	81	1.5963	1.0228	.1136	1.0000	5.0000	1.3701 To 1.8225
Grp 3	282	1.8649	1.2071	.0719	1.0000	5.0000	1.7234 To 2.0064
Total	450	1.7371	1.1120	.0524	1.0000	5.0000	1.6341 To 1.8401

Multiple Range Test

Scheffe Procedure
Ranges for the .050 level -
3.47 3.47

The ranges above are table ranges.
The values actually compared with Mean(J)-Mean(I) i.e.
.7786 * Range * Sqrt(1/N(I) + 1/N(J))

(*) Denotes pairs of groups significantly different at the .050 level

Mean	Group
1.4540	Grp 1
1.5963	Grp 2
1.8647	Grp 3

The above table shows the association between hand problem and years worked.

It is observed that groups (above 10 years) differs significantly from group 1 (0-5 years) at 0.05 level of confidence. This means that there is some association with hand problem and years worked.

TABLE 6.22

Variable G Limbs Lower Limb
By Variable Yearswo Years worked

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Ratio
Between Groups	2	18.3517	9.17595.6495		.0038
Within Groups	447	726.0171	1.6242		
Total	449	744.3688			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.8575	1.0779	.1156	.8000	5.0000	1.6277 To 2.0872
Grp 2	81	2.1901	1.2433	.1381	1.0000	5.0000	1.9152 To 2.4650
Grp 3	282	2.3787	1.3372	.0796	.8000	5.0000	2.1247 To 2.3633

Multiple Range Test

Scheffe Procedure
Ranges for the .050 level -
3.47 3.47

The ranges abaove are table ranges.
The value actually compared with Mean(J)- Mean(I) i.e.
.9012 * Range * Sqrt(1/N(I) + 1/N(J))

(*) Denotes pairs of groups significantly different at the .050 level

Mean	Group
1.8575	Grp 1
2.1901	Grp 2
2.3787	Grp 3

The above table shows the association between lower limb problem and year worked.

The scheffe Procedure shows that group 3 (above 10 years) differ significantly from group 1 (0-5 years) at 0.05 level of confidence. This indicates that there is some relation between lower limb problem and years worked.

TABLE 6.23

Variable H Res Respiratory Sys
By Variable Yearswo Years worked

Analysis of Variance

Source	D.F.	Sum of squares	Mean squares	F Ratio	F Ratio
Between Groups	2	20.1152	10.0576	11.1848	.0000
Within Groups	447	401.9511	.8992		
Total	449	422.0662			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.6621	.7132	.0765	1.0000	3.9000	1.5101 To 1.8141
Grp 2	81	1.8148	.8115	.0902	1.0000	4.6000	1.6354 To 1.9943
Grp 3	282	2.1621	1.0427	.0621	1.0000	4.6000	2.0398 To 2.2843
Total	450	2.0029	.9698	.0457	1.0000	4.6000	1.9131 To 2.0927

Multiple Range Test

Scheffe Procedure
Ranges for the .050 level -
3.47 3.47

The ranges above are table ranges.
The value actually compared with Mean(J)-Mean(I) i.e.
.6705 * Range * Sqrt(1/N(I) + 1/N(J))

(*) Denotes pairs of groups significantly different at the .050 level.

Mean	Group
1.6621	Grp 1
1.8148	Grp 2
2.1621	Grp 3

The above table shows association between respiratory system problem and years worked.

The table shows that group 3 (above 10 years) differs significantly from group 1 (0-5 years) and group 2(6-10 years) at 0.05 level of confidence. This indicates that there is some association between respiratory system disorder and years worked.

TABLE 6.24

Variable I CARDSY Cardio Vasc.Sys
By VariableYearswor · Years worked.

Analaysis of Variance

Source	D.F.	Sum of squares	Mean squares	F Ratio	F Ratio
Between Groups	2	7.2743	3.6372	5.8451	.0031
Within Groups	447	278.1489	.6223		
Total	449	285.4232			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.5770	.7335	.0786	1.0000	3.7000	1.4207 To 1.7333
Grp 2	81	1.5988	.7745	.0861	1.0000	4.3000	1.4275 To 1.7700
Grp 3	282	1.8500	.8089	.0482	1.0000	5.0000	1.7552 To 1.9448
Total	450	1.7520	.7973	.0376	1.0000	5.0000	1.6781 To 1.8259

Multiple Range Test

Scheffe Procedure
Ranges for the .050 level
3.47 3.47

The ranges above are table ranges.
The value actually compared with Mean(J)-Mean(I) i.e.
.5578 * Range * Sqrt(1/N(I) + 1/N(J))

(*) Denotes pairs of groups significantly different at the .050 level.

Mean	Group
1.5770	Grp 1
1.5988	Grp 2
1.8500	Grp 3

The above table shows the association between cardiovascular system problem and years worked.

It is observed that group 3 (above 10 years) differ significantly from group 1 (0-5 years) and group 2 (6-10 years) at 0.05 level of confidence. This means that cardiovascular system problem has some assocaition with years worked.

TABLE 6.25

Variable Nervous system
By Variable Years worked

Analaysis of Variance

Source	D.F.	Sum of squares	Mean squares	F Ratio	F Prob.
Between Groups	2	9.8114	4.9057	8.6656	.0002
Within Groups	447	253.0534	.5661		
Total	449	262.8648			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.4506	.7837	.0840	1.0000	5.0000	1.2835 To 1.6176
Grp 2	81	1.5457	.6819	.0758	1.0000	4.2000	1.3949 To 1.6965
Grp 3	282	1.7957	.7617	.0454	1.0000	4.2000	1.7065 To 1.8850
Total	450	1.6840	.7651	.0361	1.0000	5.0000	1.6131 To 1.7549

Multiple Range Test

Scheffe Procedure
Ranges for the .050 level -
3.47 3.47

The ranges above are table ranges
The value actually compared with Mean(J)-Mean(I) i.e.
.5320 * Range * Sqrt(1/N(I) + 1/N(J))

(*) Denotes pairs of groups significantly different at the .050 level

Mean	Group
1.4506	Grp 1
1.5457	Grp 2
1.7957	Grp 3

The above table shows the association between proble of nervous system and years worked.

It is clear that group 3(above 10 years) differs significantly at 0.05 level of confidence from group 1 (0-5 years) and group 2 (6-10 years). This indicates that there is some association between problem of nervous system and years worked.

TABLE 6.26

Variable Gastro-Intestinal System.
By variable years worked

Analysis of Variance

Source	D.F.	Sum of squares	Mean squares	F Ratio	F Prob.
Between Groups	2	1.2504	.6252	1.4835	.2280
Within Groups	447	188.3772	.4214		
Total	449	189.6276			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.4977	.5669	.0608	1.0000	3.6000	1.3769 To 1.6185
Grp 2	81	1.5506	.6649	.0739	1.0000	3.2000	1.4036 To 1.6976
Grp 3	282	1.6270	.6680	/0398	1.0000	4.2000	1.5487 To 1.7052
Total	450	1.5882	.6499	.0306	1.0000	4.2000	1.5280 To 1.6484

Multiple Range Test

Scheffe Procedure
Ranges for the .050 level

3.47 3.47

The ranges above are table ranges.
The value actually compared with Mean(J) - Mean(I)is..
.4590 * Range* Sqrt(1/N(I) + 1/n(J))

No two group are significantly different at the .050 level.

The above table indicates the association between gastrointestinal system problem and years worked.

The scheffe procedure clearly shows that no two groups are significantly different at the 0.05 level of confidence. Thus, it can be concluded that, the problem is more or less same in all the groups of years worked.

TABLE 6.27

Variable Eyes
By variable years worked

Analysis of Variance

Source	D.F.	Sum of squares	Mean squares	F Ratio	F Prob.
Between Groups	2	17.9553	8.9777	5.9236	.0029
Within groups	447	677.4592	1.5156		
Total	449	695.4146			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	2.1747	1.1006	.1180	1.0000	5.0000	1.9402 To 2.4093
Grp 2	81	2.3642	1.2518	.1391	1.0000	5.0000	2.0874 To 2.6410
Grp 3	282	2.6613	1.2626	.0752	1.00001	5.0000	2.5134 To 2.8093
Total	450	2.5138	1.2445	.0587	1.0000	5.0000	2.3985 To 2.6291

Multiple Range Test

Scheffe Procedure
Ranges for the .050 level -
3.47 3.47

The ranges above are table ranges.
The value actually compared with Mean(J) - Mean(I) is..
.8705 * Ranges * Sqrt (1/N(I) + 1/N(I))

(*) Denotes pairs of groups significantly different at .050 level.

Mean	Group
2.1747	Grp 1
2.3642	Grp 2
2.6613	Grp 3

The above table shows association between problem of eyes and years worked.

It is observed that group 3 (above 10 yrs) differs significantly from group 1 (0-5 years) at 0.05 level of confidence. Thia means that there is some association between eye problem and years worked.

TABLE 6.28

Variable EARS
By Variable Years worked

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	.3911	.1955	.2809	.7552
Within Groups	447	311.1131	.6960		
Total	449	311.5042			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.6448	.7912	.0848	1.0000	4.3000	1.4762 To 1.8135
Grp 2	81	1.5728	.8110	.0901	1.0000	3.7000	1.3935 To 1.7522
Grp 3	282	1.5695	.8534	.0508	1.0000	4.3000	1.4695 To 1.6695
Total	450	1.5847	.8329	.0393	1.0000	4.3000	1.5075 To 1.6618

No two groups are significantly different at the .050 level.

The above table shows association between ears problem and years worked.

It is observed by Scheffe Procedure that no two groups are significantly different at 0.05 level of confidence. This means that ear problem is almost same in all groups of years worked as they do not differ significantly.

TABLE 6.29

Variable SKIN
By Variable Years worked

Analysis of variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	11.4164	5.7082	5.2504	.0056
Within Groups	447	485.9718	1.0872		
Total	449	497.3882			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.3747	.8935	.0958	1.0000	5.0000	1.1843 To 1.5652
Grp 2	81	1.7383	1.1017	.1224	1.0000	5.0000	1.4947 To 1.9819
Grp 3	282	1.7862	1.0675	.0636	1.0000	5.0000	1.6610 To 1.9113
Total	450	1.6980	1.0525	.0496	1.0000	5.0000	1.6005 To 1.7955

(*) Denotes pairs of groups significantly different at the .050 level

Mean	Group	Grp 1	Grp 2	Grp 3
1.3747	Grp 1			
1.7383	Grp 2			
1.7862	Grp 3	*		

The above table shows association between problem of skin and years worked.

It is observed that group 3 (above 10 years) differs significantly from group 1(0-5 years) at 0,05 level of confidence, indicating that problem of skin has some association with years worked.

TABLE 6.30

Variable NOSE
By Variable Years worked

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob,
Between Groups	2	10.7189	5.3594	5.4638	.0045
Within Groups	447	438.4650	.9809		
Total	449	449.1839			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.9425	.8971	.0962	1.0000	4.5000	1.7513 To 2.1337
Grp 2	81	1.9790	.9073	.1008	1.0000	5.0000	1.7784 To 2.1796
Grp 3	282	2.2784	1.0391	.0619	1.0000	5.0000	2.1566 To 2.4002
Total	450	2.1596	1.0002	.0472	1.0000	5.0000	2.0669 To 2.2522

(*) Denotes pairs of groups significantly different at the .050 level

Mean	Group	Grp 1	Grp 2	Grp 3
1.9425	Grp 1			
1.9790	Grp 2			
2.2784	Grp 3	*		

The above table indicates that association between nose problem and years worked.

It is clear that group 3 (above 10 years) is significantly different from group 1(0-5 years) at 0,05 level of confidence. Thus, it can be concluded that there is some association between nose problem and years worked.

TABLE 6.31

Variable SLEEP
By Variable Years worked

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	10.4835	5.2418	5.5952	.0040
Within Groups	447	418.7630	.9368		
Total	449	429.2466			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	2.4655	1.1478	.1251	1.0000	5.0000	2.2209 To 2.7101
Grp 2	81	2.2407	.8159	.0907	1.0000	5.0000	2.0603 To 2.4212
Grp 3	282	2.6390	.9474	.0564	1.0000	5.0000	2.5280 To 2.7501
Total	450	2.5338	.9778	.0461	1.0000	5.0000	2.4432 To 2.6244

(*) Denotes pairs of groups significantly different at the .050 level

Mean	Group	Grp 2	Grp 1	Grp 3
2.2407	Grp 2			
2.4655	Grp 1			
2.6390	Grp 3	*		

The above table shows association between sleep problem and years worked.

The Scheffe Procedure indicates that group 3(above 10 years) differs significantly from group 2 (6-10 years) at 0.05 level of confidence. This shows that there is some association between sleep problem and years worked.

TABLE 6.32

Variable ASTHMA
By Variable Years worked

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	27.4840	13.7420	10.8276	.0000
Within Groups	447	567.3145	1.2692		
Total	449	594.7983			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	1.3632	.7298	.0782	1.0000	4.2000	1.2077 To 1.5188
Grp 2	81	1.3407	.7311	.0812	1.0000	4.6000	1.1791 To 1.5024
Grp 3	282	1.8631	1.3053	.0777	1.0000	5.0000	1.7101 To 2.0161
Total	450	1.6724	1.1510	.0543	1.0000	5.0000	1.5658 To 1.7791

(8) Denotes pairs of groups significantly different at the .050 level

Mean	Group	Grp 2	Grp 1	Grp 3
1.3407	Grp 2			
1.3632	Grp 1			
1.8631	Grp 3	**		

The above table shows association between asthma and years worked.

It is observed that group 3(above 10 years) differs significantly from group 2 (6-10 years) and group 1 (0-5 years) at 0.05 level of confidence. This indicates that problem of asthma has some relation with years worked.

TABLE 6.33

Variable STRESS
By Variable Years worked

Analysis of variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	2.4792	1.2396	1.2214	.2958
Within Groups	447	453.6530	1.0149		
Total	449	456.1322			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
Grp 1	87	2.7437	.9700	.1040	1.0000	4.8000	2.5369 To 2.9504
Grp 2	81	2.7778	1.0993	.1221	1.0000	5.0000	2.5347 To 3.0209
Grp 3	282	2.9121	.9912	.0590	1.0000	5.0000	2.7959 To 3.0282
Total	450	2.8553	1.0079	.0475	1.0000	5.0000	2.7620 To 2.9487

Notwo groups are significantly different at the .050 level

The above table shows the association between stress problem and years worked.

The Scheffe Procedure shows that no two groups are significantly different at 0.50 level of confidence. This means that stress problem is more or less same in all the three groups of years worked.