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Research Article

ASSESS THE HEALTH STATUS OF GARAGE WORKERS AND DETERMINE THEIR KNOWLEDGE AND PRACTICE REGARDING EFFECT OF GARAGE WASTE ON HEALTH AND ITS PREVENTION IN A VIEW TO PROVIDE INFORMATIONAL BOOKLET IN A SELECTED GARAGES AT VIJAYAPUR CITY

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A R T I C L E I N F O

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Health Status, garage workers, Body Mass Index, Knowledge, Practice, waist circumference

A B S T R A C T

Aim: Assess The Health Status Of Garage Workers And Determine Their Knowledge And Practice Regarding Effect Of Garage Waste On Health And Its Prevention**. Materials and methods:** 320 garage workers are selected by using purposive sampling methods. Knowledge is assessed by structured knowledge questionnaires; practice was assessed by rating scale. Health status of the garage workers was assessed by body mass index, waist circumference, blood pressure, health problems with different system. Data were analyzed by using descriptive and inferential statistical methods. **Result:** The study result shows that 33.12% of workers are suffering with overweight, 5.31% are obesity level 1 according to BMI classification. 294 (91.87%) workers are having normal waist circumference and 26 (8.125%) of workers are at risk with increased waist circumference. 39.06% workers are suffering with pre hypertension, 17.81% are suffering with hypertension stage 1 and 1.56% are suffering with hypertension stage 2. There is a negative correlation between knowledge and practice scores (i.e r= -0.308). The mean and SD of knowledge scores is 10.26 and 7.06 respectively. The mean and SD of practice scores is 34.81 and 4.627 respectively. **Conclusion:** The researcher recommends that in future many studies has to be conduct by health workers among garage workers regarding health problems and their safety and most important is awareness programme on prevention of health hazards among garage workers.

INTRODUCTION

Automobile garages are a small-scale manufacturing composed of skillful workers, such as mechanics, spray-painters, panel beaters, welders, battery recyclers, and radiator and air-conditioner repairers. They are located along roadsides and in interiors of informal settlements to service motor vehicles that break down on the roads. These workshops have been determined as better sources of environmental pollution, because of the unregulated practices of these workers[1].

A distinctive attribute of garages is that workers deal with dirt, dist, oil as part of their routine work. Because of the interaction between garage workers and the cars and two wheeler motors that they service, repair, and maintain, garage work is considered "dirty". Unlike the modern clean industrial unit in which new car and vehicles parts are being assembled, the workers in garages get dirty as they effort and different substances contaminate the environment recurrently[2]. A study explored the overall health hazards of automobile- repair-shop wastewater on workers who randomly handled toxic wastewater during battery, car, and oil/grease washing.

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The water is polluted by lead and cadmium, and in the course of their work they are exposed to these exogenous elements, which put them in a susceptible position[3]. Workplace safety is undermined by poor working environments, ie, dirty workplaces. Poor workplace organization has been found across all sectors, with associated tripping hazards[4].

Garage workers are open to the elements to a wide range of chemicals, including heavy metals, contained in brake fluids, degreasers, detergents, lubricants, metal cleaners, benzene, solvents, and asbestos (from brake repair), as well as welding fumes and car exhausts[5,6]. A study showed significantly increased levels of lead, cadmium, chromium, zinc, and copper in mechanics, spray-painters and battery recyclers compared with unexposed controls[1,3,7,8]. Biological monitoring of chemical exposure in the workplace has become increasingly important in the assessment of health risk as an integral part of the overall occupational health and safety strategy. Biological monitor is an important instrument in the prevention of occupational diseases related to those exposed to chemicals on a regular basis. In order to evaluate workplace conditions on a continuous basis, emphasis should be placed on environmental monitoring, complemented by biological monitoring[9].

MATERIALS AND METHODS

Statement of the problem: Assess the health status of garage workers and determine their knowledge and practice regarding effect of garage waste on health and its prevention in a view to provide awareness programme among garage workers in a Vijayapur city.

Objectives of the study

1. Assess the health status of garage workers regarding effect of garage waste
2. Determine the knowledge of garage workers regarding effect of garage waste on health and its prevention
3. Determine the self reported practice of garage workers regarding effect of garage waste on health and its prevention
4. To find out the correlation between knowledge and practice of garage workers regarding effect of garage waste on health and its prevention
5. To find out the association between health status, knowledge and practice scores with selected demographic variables

Assumptions

The investigator assumes that:

1. The garage workers have less knowledge regarding adverse effect of garage waste on health and they might be suffering with this.
2. The garage workers having poor practice when handling garage waste products as well as while using it.
3. The awareness programme will help them to overcome the poor knowledge and poor practice while handling the garage waste

Hypotheses

The study is based on the following hypothesis and this will be tested at 0.05 levels of significance

- **H_1**: There is significant correlation between knowledge and practice scores regarding effect of garage waste on health and its prevention
- **H_2**: There is a significant association between health status with selected demographic variables
- **H_3**: There is a significant association between knowledge scores with selected demographic variables
- **H_4**: There is a significant association between practice scores with selected demographic variables

Source of data: Data will be collected from the automobile garage workers

Research design: Descriptive co relational study design

Setting: The present study will be conducted in some selected automobile garages from selected areas of Vijayapur city

Population: In this study, the population consists garage workers working in some selected automobile garages at Vijayapur city.

Sampling procedure: In this study purposive sampling method will be used.

Sample size: The sample for the present study would consist of 320 automobile garage workers who meet the inclusion criteria from some selected garages at Vijayapur city.

Instruments intended to be used

- Structured knowledge questionnaire
- Practice questionnaire (Rating scale)
- Health assessment format

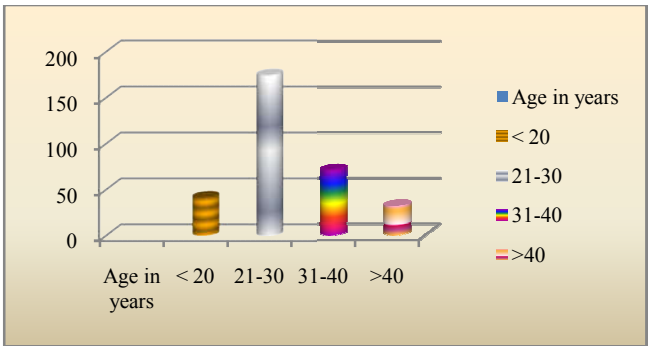
RESULTS

Demographic data of garage workers

Table No 1 Shows that distribution of garage workers according to age in years

N=320

S No	Demographic variable	Frequency	%
1	**Age in years**		
	< 20	42	13.12
	21-30	175	54.68
	31-40	71	2.18
	>40	32	10



N=320

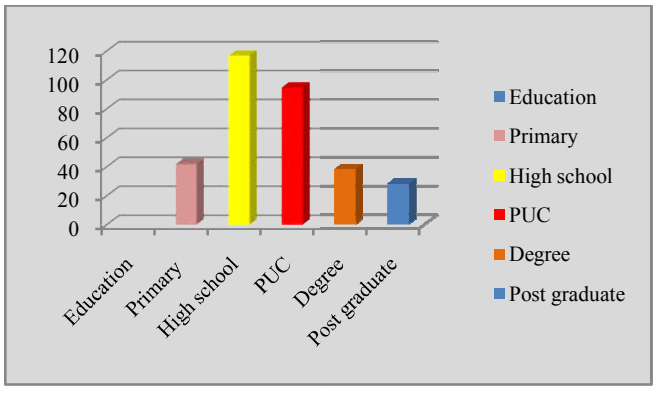
Fig No 1 Cylindrical bar diagram shows that distribution of garage workers according to age in years

The above table and diagram shows that 13.12 % of garage workers belongs to <20 years of age group, 54.68% belongs to 21-30 years, 2.18% workers belongs to 31-40 years and 10% belongs to > 40 years.

Table No 2 Shows that distribution of garage workers according to education

N=320

	Education		
2	Primary	42	13.12
	High school	117	36.56
	PUC	95	29.68
	Degree	38	11.87
	Post graduate	28	8.75



N=320

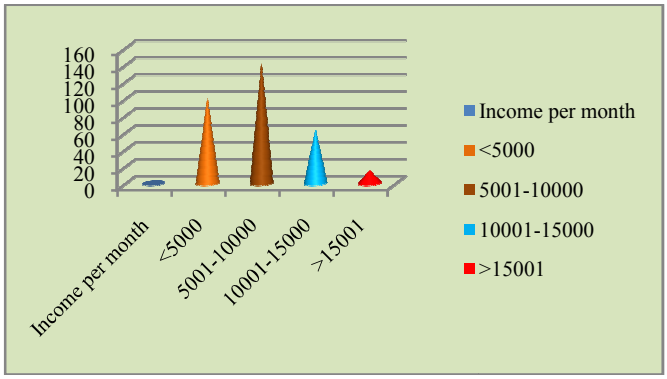
Fig No 2 Bar diagram shows that distribution of garage workers according to education status

The above table and diagram shows that 13.12% of workers had primary education, 36.56% had high school education, 29.68% had PUC education, 11.87%had degree education and 8.75% had post graduate education

Table No 3 Represents that garage worker distribution according to income per month

N=320

3	Income per month		
	<5000	100	31.25
	5001-10000	142	44.37
	10001-15000	63	19.68
	>15001	15	4.68



N=320

Fig No 3 Cone diagram shows that sample distribution according to income per month

The above table and diagram shows that 31.25% garage workers had income less than 5000 rupees, 44.37% had 5001-10000 rupees, 19.68% workers had 10001-15000 rupees and 4.68% had more than 15000 rupees.

Table no 4 Depicts 85% of garage workers had early information regarding hazards of garage waste and 15% workers had n o information regarding hazards of garage waste.

N=320

4	Had early information regarding hazards of garage waste		
	Yes	272	85
	No	48	15

Table no 5 Represents that 19.68% of workers had information from mass media, 21.56% from friends, 18.75% from health care professionals, 10.93% from relatives and 14.06% from school or college

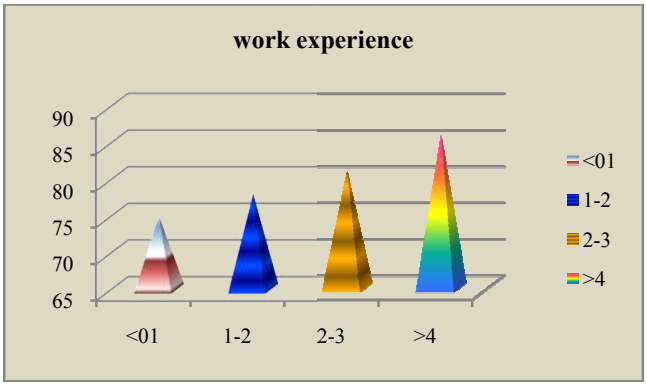
N=272

5	If yes the source of the information		
	Mass media	63	19.68
	Friends	69	21.56
	Health care professionals	60	18.75
	Relatives	35	10.93
	School or college	45	14.06

Table no 6 Represents that work experience of garage workers

N=320

6	Since how many year working in garage		
	<01	75	23.43
	1-2	78	24.37
	3-4	81	25.31
	>4	86	26.87



N=320

Fig no 4 Pyramid diagram shows that distribution of garage workers according to their work experience

The above table and diagram shows that 23.43% of workers had less than 01 year experience, 24.37% had 1-2 year experience, 25.31% had 2-3 year experience and 26.87% had more than 4 year of experience in garage.

Table no 7 Shows that 57.18% of garage workers feel sick during working in garage and 42.82% had no feeling of sickness.

N=320

7	Have you feel sick often		
	Yes	183	57.18
	No	137	42.82

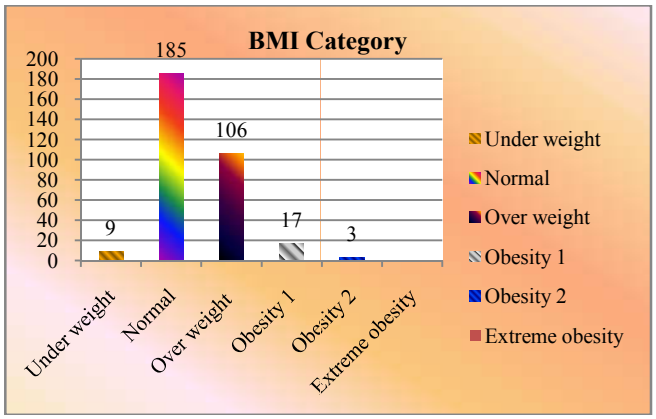
Health assessment of garage workers

BMI classification

Table no 8 Shows that garage workers BMI Status

N=320

S no	BMI Category	Score level	Frequency	%
1	Under weight	< 18.5	9	2.81
2	Normal	18.5-24.9	185	57.81
3	Over weight	25-29.9	106	33.12
4	Obesity 1	30-34.9	17	5.31
5	Obesity 2	35-39.9	3	0.93
6	Extreme obesity	40	0	0
		Total	320	100



N=320

Fig No 5 Simple bar diagram shows that garage workers BMI status

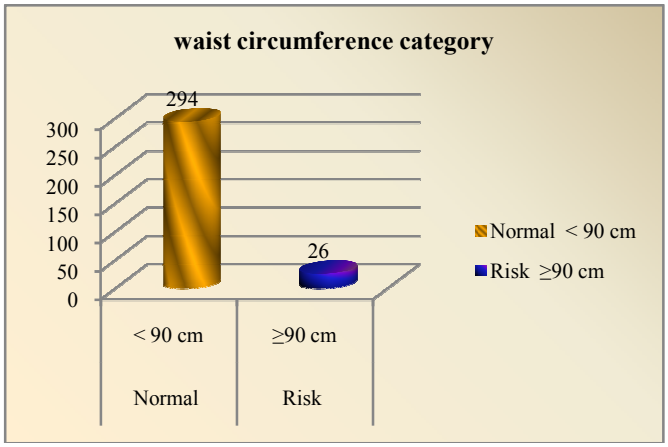
The above table and diagram shows that Shows that 2.81% of garage workers belongs to underweight, 57.81% had normal weight, 33.12% had overweight, 5.31% of workers belongs to obesity level 01and 0.93% of workers belongs to obesity level 2. No one belongs to extreme obesity.

Waist circumference

N=320

S no	W C Category	Score level	Frequency	%
1	Normal	< 90 cm	294	91.87
2	Risk	≥90 cm	26	8.125
		Total	320	100

Table No 9 Represents that garage workers distribution according to waist circumference



N=320

Fig No 6 Cylindrical bar diagram shows that garage workers waist circumference status

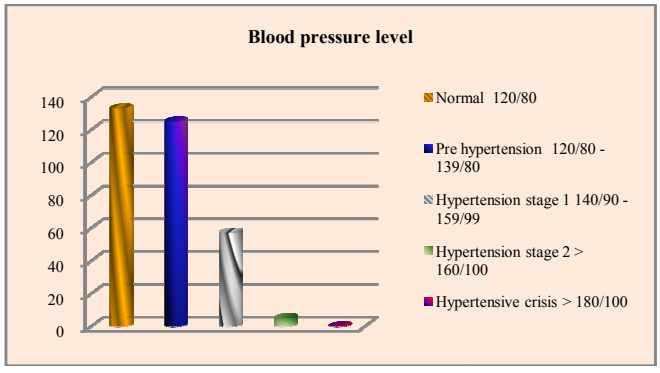
The above table and diagram shows that 91.87% of garage workers belongs to normal waist circumference (<90cm) and 8.125% workers had risky waist circumference for abnormal health (>90cm)

Blood pressure level among garage workers

Tale no 10 Represents blood pressure level among garage workers

N=320

S no	Blood pressure Category	Score level (mm of hg)	Frequency	%
1	Normal	120/80	133	41.56
2	Pre hypertension	120/80 - 139/80	125	39.06
3	Hypertension stage 1	140/90 - 159/99	57	17.81
4	Hypertension stage 2	> 160/100	5	1.56
5	Hypertensive crisis	> 180/100	0	0
		Total	320	100



N=320

Fig No 7 Cylindrical bar Diagram shows that blood pressure level among garage workers

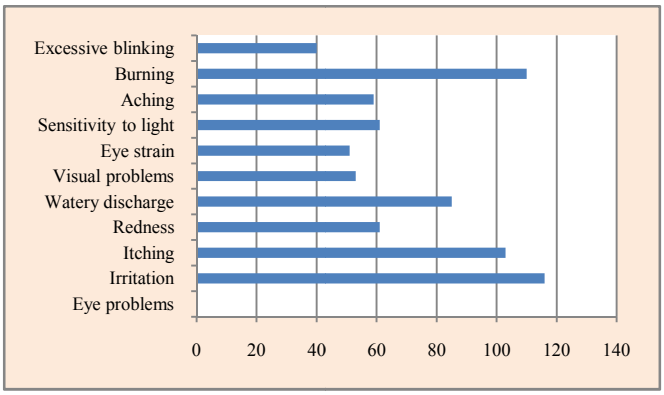
The above table and diagram represents that 41.56% of garage workers had normal blood pressure level, 39.06% had pre hypertension, 17.81% had hypertension stage 1, 1.56% had hypertension stage 2.

Health problems of garage workers

Table No 11 Shows that the garage workers affected with different eye problems

N=320

Eye problems of garage workers	Frequency	%
Irritation	116	36.25
Itching	103	32.18
Redness	61	19.06
Watery discharge	85	26.56
Visual problems	53	16.56
Eye strain	51	15.93
Sensitivity to light	61	19.06
Aching	59	18.43
Burning	110	34.37
Excessive blinking	40	12.5



N=320

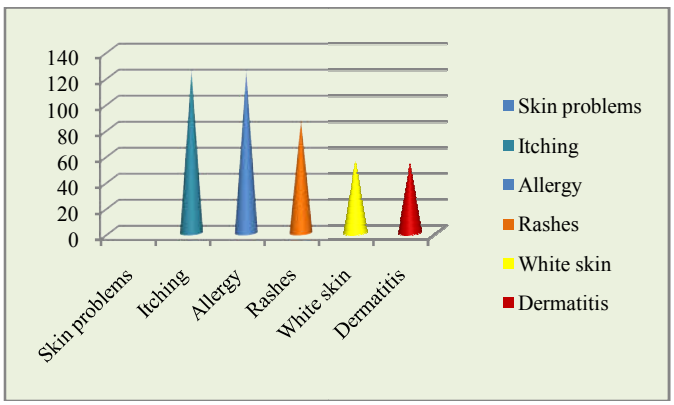
Fig No 8 Simple bar diagram shows that garage workers affected with different eye problems

The above table and diagram shows that 36.25% of garage workers suffering with irritation in the eyes, 32.18% suffering with itching, 19.06% redness of the eyes, 26.56% watery discharge, 16.56% visual problems, 15.93% eye strain, 19.06% sensitivity to light, 18.43% aching, 34.37% burning and 12.5% excessive blinking of the eyes.

Table no 12 Shows skin problems of garage workers

N=320

Skin problems of garage workers	Frequency	%
Itching	126	39.37
Allergy	125	39.06
Rashes	87	27.18
White skin	55	17.18
Dermatitis	53	16.56



N=320

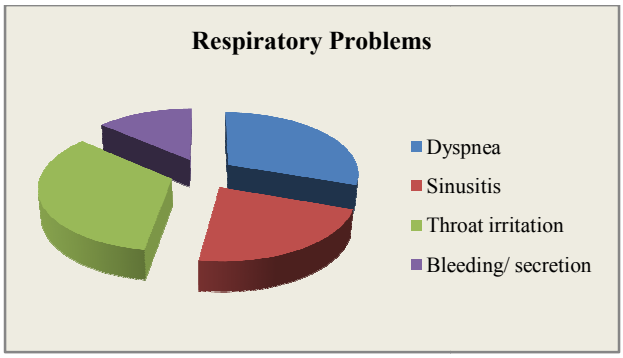
Fig No 9 Cone diagram shows that Skin problems among garage workers

The above table and diagram shows that 39.37% of workers suffering with itching, 39.06 % having allergy, 27.18% suffering with rashes, 17.18 % had white skin and 16.56% having dermatitis

Table no 13 represents that garage workers suffering with respiratory problems

N=320

Respiratory problems	Frequency	%
Dyspnea	118	36.87
Sinusitis	86	26.87
Throat irritation	132	41.25
Bleeding/ secretion	53	16.56



N=320

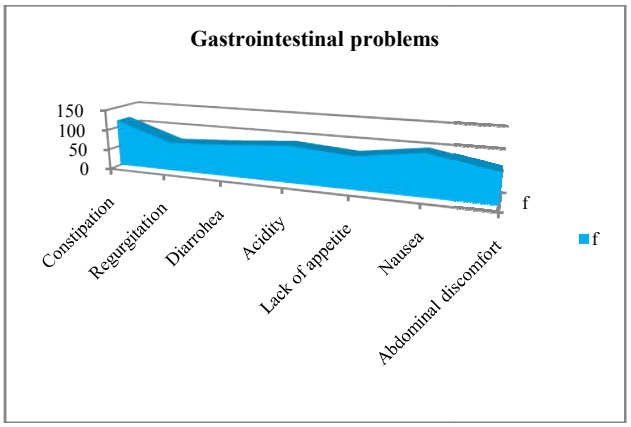
Fig No 10 Pie diagram shows that respiratory problems among garage workers

The above table and diagram shows that 36.87% workers suffering with dyspnea, 26.87% with sinusitis, 41.25% with throat irritation and 16.56% with bleeding or secretions.

Table no 14 Depicts that gastro intestinal problems among garage workers

N=320

Gastro intestinal problems	Frequency	%
Constipation	118	36.87
Regurgitation	71	22.18
Diarrohea	79	24.68
Acidity	90	28.12
Lack of appetite	79	24.68
Nausea	100	31.25
Abdominal discomfort	72	22.5



N=320

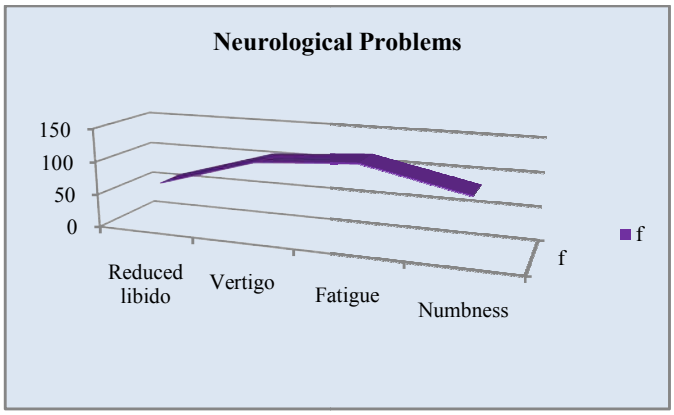
No 11 Area Diagram shows that gastro intestinal problems among garage workers

The above table and diagram shows that gastro intestinal problems among garage workers. 36.87% workers suffering with constipation, 22.18% with regurgitation, 24.68% with diarrhea, 28.12% with acidity, 24.68% with lack of appetite, 31.25% with nausea and 22.5% with abdominal discomfort.

Table no 15 Represents that neurological problems among garage workers

N=320

Neurological problems	Frequency	%
Reduced libido	63	19.68
Vertigo	107	33.43
Fatigue	118	36.87
Numbness	86	26.87



N=320

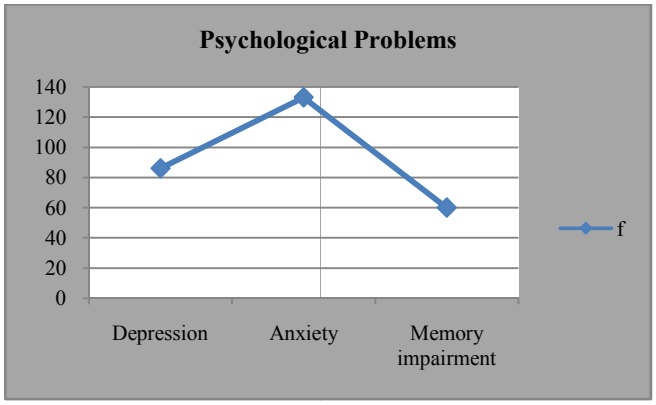
Fig No 12 Line Diagram Shows that garage workers suffering with neurological problems

The above table and diagram shows that 19.68% had reduced libido, 33.43% with vertigo, 36.87% with fatigue and 26.87% with numbness as a neurological problems**.**

Table no 16 Shows psychological problems among garage workers

N=320

Psychological problems	Frequency	%
Depression	86	26.87
Anxiety	133	41.56
Memory impairment	60	18.75



N=320

Fig No 13 Line Diagram shows that psychological problems among garage workers

The above table and diagram shows that 26.87% of garage workers suffering with depression, 41.56% with anxiety and 18.75% with memory impairment.

Table no 17 Depicts that ear problems among garage workers

N=320

Ear problems	Frequency	%
Reduced hearing	120	37.5
Excess wax collection	106	33.12
One side hearing is present	71	22.18
Irritation in the ear	92	28.75

N=320

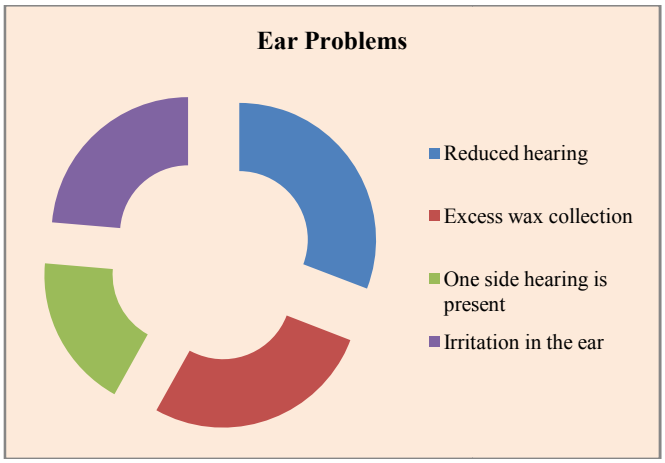


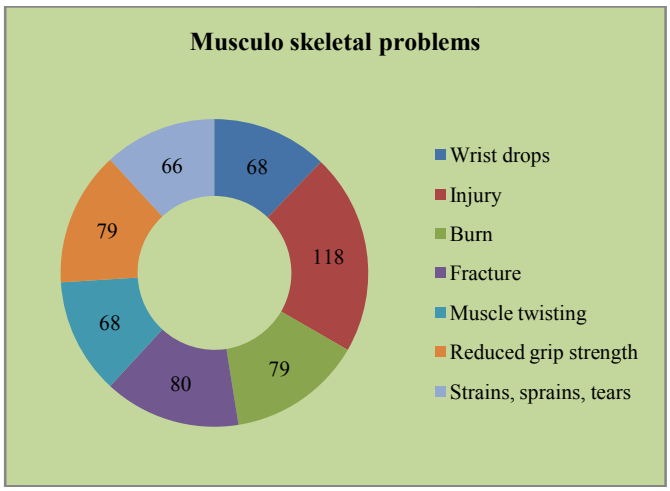
Fig No 14 Doughnut diagram shows that garage workers suffering with ear problems

The above table and diagram shows that 37.5% suffering with reduced hearing, 33.12% suffering excess wax collection, 22.18% present with one side hearing and 28.75% suffering with irritation in the ear

Table no 18 Shows that Garage workers suffering with musculo skeletal problem

N=320

Musculo skeletal problems	Frequency	%
Wrist drops	68	21.25
Injury	118	36.87
Burn	79	24.68
Fracture	80	25
Muscle twisting	68	21.25
Reduced grip strength	79	24.68
Strains, sprains, tears	66	20.62



N=320

Fig No 15 Pie diagram shows that musculoskeletal problems of garage workers

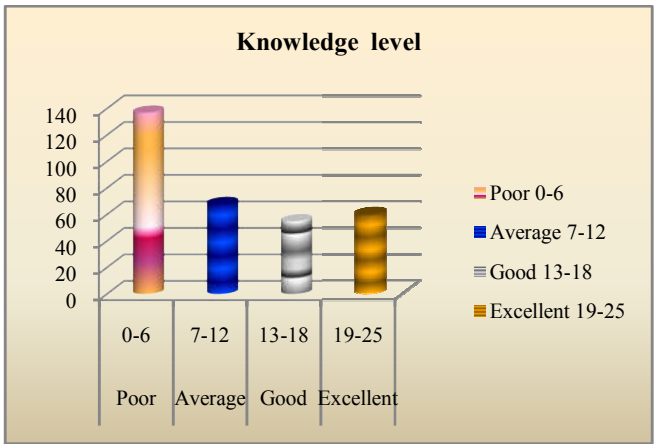
The above table and diagram represents that 21.25% had wrist drops, 36.87% had injury, 24.68% had burn, 25% met with fracture, 21.25% had muscle twisting, 24.68% reduced grip strength and 20.62% had muscle strains, tears, sprains

Knowledge scores

Table no 19 Shows that knowledge level of garage workers regarding hazards of garage waste

N=320

S no	Knowledge level	Score	frequency	%
1	Poor	0-6	137	42.81
2	Average	7-12	68	21.25
3	Good	13-18	55	17.18
4	Excellent	19-25	60	18.75
		Total	320	100



N=320

Fig No 16 Cylindrical bar diagram shows that distribution of knowledge level of garage workers

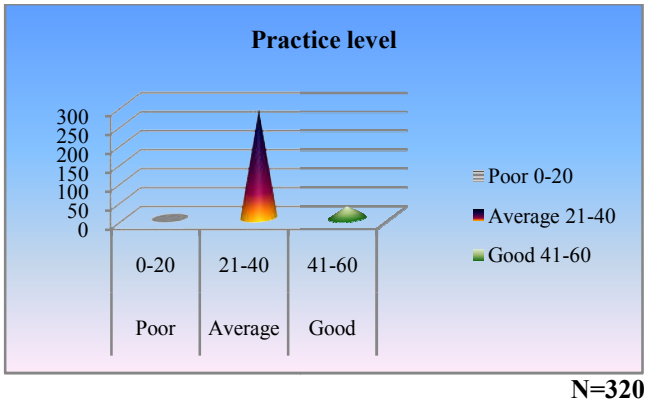
The above table and diagram shows that 42.81%of garage workers had poor knowledge, 21.25% had average knowledge, 17.18% had Good knowledge and 18.75% had excellent knowledge.

Practice Scores

Table no 20 Depicts that practice level of garage workers in prevention of health hazards by garage waste

N=320

S no	Practice level	Score	frequency	%
1	Poor	0-20	0	0
2	Average	21-40	289	90.31
3	Good	41-60	31	9.69
		Total	320	100



N=320

Fig No 17 Cone diagram shows that practice level of garage workers in prevention of health hazards by garage waste

The above table and diagram shows that 90.31% workers had average practice and 9.69% had good practice in prevention of health hazards by garage waste

Association between knowledge scores with demographic variables of garage workers

Table 21 Shows that there is a significant association between knowledge scores with selected demographic variables like age in years (x2=31.86, df=9), income (x2=51.73, df=9), work experience (x2=11.77, df=9) and education level of garage workers (x2=62.02, df=9) at 0.05 level of significance. So research hypothesis is accepted and null hypothesis is rejected.

N=320

S No	Demographic data	DF	Chi square	Table value	P Value	Significance	Remarks
1	Age in years	9	31.86	16.92	0.0002	S	Research hypothesis is accepted and null hypothesis is rejected
2	Income	9	51.73	16.92	0.0001	S	Research hypothesis is accepted and null hypothesis is rejected
3	Work experience	9	121.77	16.92	0.0001	S	Research hypothesis is accepted and null hypothesis is rejected
4	Education	9	62.02	16.92	0.0001	S	Research hypothesis is accepted and null hypothesis is rejected

Association between Practice scores with demographic variables of garage workers

Table 22 Represents that there is a significant association between education level of garage workers with practice scores (X2=19.97, df=6) where as there is no significant association between age in years (x2=5.395, df=6), income (x2=6.092, df=6) and work experience (x2=4.410, df=6) with practice score at 0.05 level of significance.

N=320

S No	Demographic data	DF	Chi square	Table value	P Value	Significance	Remarks
1	Age in years	6	5.395	12.59	0.4942	NS	Null hypothesis is accepted and research hypothesis is rejected
2	Income	6	6.092	12.59	0.4130	NS	Null hypothesis is accepted and research hypothesis is rejected
3	Work experience	6	4.410	12.59	06214	NS	Null hypothesis is accepted and research hypothesis is rejected
4	Education	6	19.97	12.59	0.0028	S	Research hypothesis is accepted and null hypothesis is rejected

Correlation between knowledge and practice scores

Table 23 Shows that there is a negative correlation between knowledge and practice scores (i.e r=-0.308). The mean and SD of knowledge scores is 10.26 and 7.06 respectively. The mean and SD of practice scores is 34.81 and 4.627 respectively.

N=320

Variable	Mean	Median	SD	R value	P value	Significance	Remarks
Knowledge	10.26	7	7.06	-0.308	0.0001	S	Mild Negative correlation
Practice	34.81	34	4.627				

Acknowledgment

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