

# Study to Compare Anxiety, Depression and Alcohol Use between Manhole Workers and Other Class Four Municipality Workers

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## Abstract

**Background:** Working conditions has serious effect on person's mental and physical health. Manhole workers work in very demanding and inhuman environment. Many studies shown prevalence of depression, anxiety and substance abuse in people involved in manual cleaning work.

**Methodology:** Total 100 class IV workers from which 50 manhole workers and rest 50 were other class IV, were studied in a single centric cross-sectional study. The scales used were AUDIT, HAM-A, HAM-D.

**Statistical Analysis:** Scores obtained were computed using basic descriptive statistics as well as computerized statistical software.

**Results:** Compared to other class IV workers, more numbers of manhole workers were having significant and more severe anxiety, depression and substance abuse.

**Conclusions:** This study provides insight about mental health of somewhat neglected class of societies.

**Keywords:** Class IV, Manhole workers, Anxiety, Depression, Substance abuse.

## Introduction

The World Health Organization defines mental health as a platform of establishing an individual's realization of potentials, coping with real life stresses and working productively, thereby making a significant contribution towards individual communities.<sup>(1)</sup>

It needs to be recognized amongst the mental health employees in government sectors. It also symbolizes an important determinant in their overall health. Inadequate work environment including unnecessary stress and declining mental health may affect their ability to contribute both in their personal and professional lives.<sup>(2)</sup>

Work-related stress is reason for occupational ill health, poor performance and human mistakes. Stress can affect body, thoughts, feelings and behavior. Stress can contribute too many health problems, like increased blood pressure, cardiac issues, obesity etc. as well as

psychological effects such as anxiety and depression, loss of concentration and poor decision making.

Mild pressure can be motivating but when it becomes excessive, it can produce stress.

Manhole workers and other class IV workers have to work under stressful conditions. They perform a valuable service to our communities by collecting garbage and removing it to proper disposal areas. The job is physically as well as psychologically demanding. Sanitation workers work in any weather conditions. There is also a significant injury risk associated with the job. Social stigmatization is also high because of their job referred as unclean or lowly in community.

The following can be the reason for work related stress in manhole workers:<sup>(2)</sup>

- Relationship problems with superiors;

- Bureaucratic constraints;
- Relationship problems with colleagues;
- Performance pressure
- Poor job prospects including the type of work done and the conditions exposed during work;
- High demand for performance: Unrealistic expectations add considerable amount of stress within the employees. which, sometimes, puts unhealthy and unreasonable pressures on the employee, can be a tremendous source of stress and suffering. Increased workload, more hours of duty and increased performance pressure all the time, lead to physical and emotional fatigue amongst the employees. Increased travels and prolonged separation from family members also indulge in being stressors;
- Job insecurity: Employees face major stressors in association with their jobs, regarding the involvements of economic instabilities, takeovers and their successive counter pressures in their workplaces.
- Other job stressors are uncomfortable working conditions, no control over work process and monotony. If work role ambiguity is decreased, the job strain will reduce and will eventually reduce work-related psychological disorders like anxiety disorders.<sup>(2)</sup>

Work pressure can lead to mental health problems like depression and anxiety in manhole workers and other class IV workers, and also can be associated with more alcohol use.

Depression is a mood disorder indicated by constant decline in mood or markedly decrease in the achievement of pleasure for a period of two or more weeks. It influences both workers and organizations negatively. It also interferes with routine activities and has negative effect on quality of life, the functional skills in the workplace, can cause decreased productivity, along with increased consumption of alcohol and tobacco.<sup>(3)</sup>

The understanding and screening of alcohol abuse in the population and workers is very important for the prevention of risky behavior and to reduce the psychological and physical negative effects due to the hazardous assumption. Thus, excessive alcohol consumption can be evaluated with the help of the Alcohol Use Disorders Identification Test for Consumption

(AUDIT-C) scale, which is instead a shorter, modified component of the AUDIT instrument.<sup>(4)</sup>

Thus, there is a need to address the correlates of stress and its associated psychiatric morbidities especially in manhole workers with alcohol use, to prevent it from assuming epidemic proportion. As far as my knowledge, there is no such study done in class IV workers in urban area of western India. This study is therefore aimed, to identify depressive and anxiety symptoms in association with sociodemographic variables and patterns of alcohol intake in the manhole workers and other class IV workers in semi- government and government organization of urban area<sup>(5)</sup>

### Aims And Objectives:

- To evaluate sociodemographic variables among manhole workers and other class four workers and compare it with alcohol use.
- To evaluate and compare alcohol use pattern among manhole workers and other class four workers.
- To evaluate and compare anxiety among all manhole workers and other class four workers and to compare level of anxiety among alcohol users of both groups.
- To evaluate and compare depression among manhole workers and other class four workers and to compare level of depression among alcohol users of both groups.

### Materials and Method

This study is community-based, cross-sectional observational study conducted for one year in these mi government and government organization of the urban area, Ahmedabad.

Total 100 workers were included in the study, fifty from each group. One group was manhole workers and second group was other class four workers working in semi government and government organization.

Aged between 18-55 years and permanent workers with experience of more than 2 years were included in the study.

Workers who were on psychiatric treatment and those who did not give consent, were not included in the study.

Subjects were given informed consent forms and educated about the study.

Sociodemographic data was collected and then the following scales were applied to the sample size for assessment:

1. Alcohol Use Disorder Identification Test (AUDIT)
2. Hamilton - Anxiety rating scale
3. Hamilton - Depression rating scale

**Alcohol use disorder identification test:** It is an internationally approved screening test. It helps to denote the implications of alcohol dependency, harmful and as well as hazardous drinking. It is a 10-item questionnaire, usually completed within a duration of two minutes. Every question is scored from zero to four, scored from zero to four 40. Harmful or hazardous alcohol consumption is considered when the total score is equal to or more than 8. An individual is considered alcohol dependent, when the score is equal to or more than 13. Alcohol consumption is considered non-harmful or non-hazardous, when the totals core is less than 8.(6)

**Hamilton anxiety rating scale:** This scale helps tome a sure these verity correlates of various anxiety symptoms. It consists of 14 items, measuring both somatic and psychic anxiety. The reliability of the scale has been acceptable.

Every item is evaluated on a scale of 0 to 4, with a total score being within the range of 0 to 56. Values less than 17 denote mild anxiety. Values ranging from 18 to 24 denote mild to moderate anxiety, whereas values ranging from 25 to 30 denote moderate to severe anxiety.(7,8)

**Hamilton Depression Rating Scale:** It is a widely used scale to assess depression worldwide. Developed in 1960 by Dr. Max. Hamilton of the University of Leeds, England, the scale has been a standard in variety of trials. The scale consists of 17 items. The scale emphasizes upon the physical and melancholic

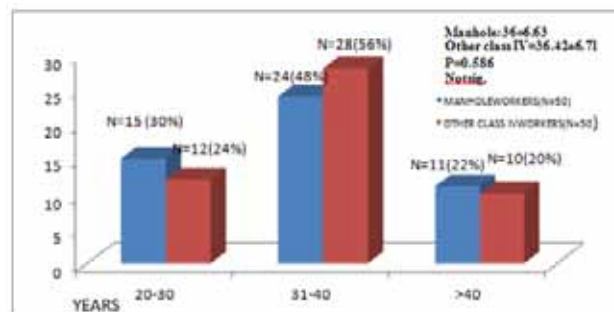
symptoms of depression. A 21-item version of the scale is also available. Interpretation is by a Likert scale of either 0 to 4 or 0 to 2. Scores can range from 0 to 54. A score of 0 – 7 denotes normal findings. Score between 8 – 13 denotes mild form of depression. Scores between 14 – 18 denotes moderate form of depression. Severe form of depression is indicated when the scores range between 19 – 22, whereas scores more than or equal to 23 denote very severe form of depression.(9)

**Statistical Analysis:** Statistical analysis was done fort he study by chi-square test, student-t test, proportion and mean. The SPSS trial version and the Microsoft excel version of 2007, were used for statistical analysis.

## Result

### D) Sociodemographic Variables:

#### A) Age:



Study data from Graph-1 shows out of 100 workers. Mean age is 36.21±6.64 years. Minimum age is 24 and maximum is 52 years. 27% were from age 20-30,52% were from 31-40 and 21% from >40 years. Out of 50 manhole workers, 30% were from 20-30 years,48% from 31-40 years and 22% were from >40 years. Out of 50 other class IV workers 24%were from 20-30 years, 56% were from 31-40 years and 20% were from>40 years of age. Data shows that as age increases, audit score also increases. Pearson’s correlation p=0.005 (significance).

### Correlations:

		Age	Audit score
Age	Pearson Correlation	1	.365**
	Sig. (2-tailed)		.005
	N	57	57
Audit score	Pearson Correlation	.365**	1
	Sig. (2-tailed)	.005	
	N	57	57

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

**B) Education:**

Data shows out of 100 workers, 74% workers were educated (primary school-34%,middle school 30%, high school 10%) and 26% were illiterate. Out of 50 manhole workers 28% were uneducated, 36% were having education up to primary school, 28% were having up to middle school and only 8% were having education up to high school. While out of 50 other class IV workers 24% were uneducated, 32% were having education up to primary school, 32% were having up to middle school and only 12% were up to high school. Our study findings don't reveal any statistical significant difference regarding education in both groups.

**C) Marital Status:** Out of 100 workers, 81% were married, 7% were unmarried and 12% were divorced. In Manhole workers, 78% were married, 2% were unmarried and 20% were divorced. In Other class IV workers, 84% were married, 12% were unmarried and 4% were divorced. This shows that divorce is more in manhole workers, around 5 times more, as compared to class IV workers. Data is statistically significant (p=0.011).

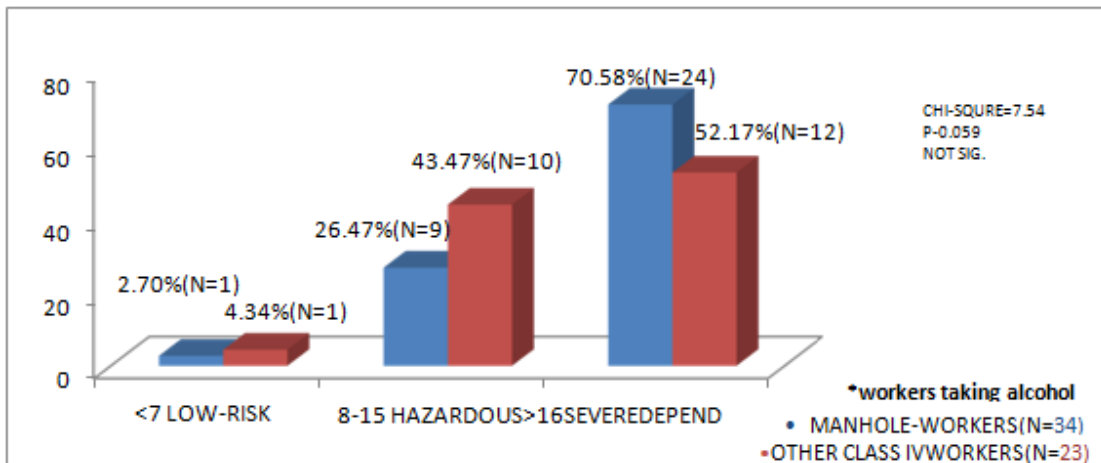
**D) Socioeconomic Status:** Out of 100 workers, 14% were from the lower class, 72% were from the lower- middle class, while 14% were from the upper-middle class. In manhole workers, 16% were from the lower class, 74% were from the lower-middle class,whereas 10%were from the lower-middle class middle class. In other class IV workers, 12% were from the lower class, 70% were from the lower-middle class, while 18% were from the upper-middle class. Our study does not show any significant difference amongst both groups regarding, the socioeconomic status.

**II) Alcohol Pattern among Study Population:**

**A) Prevalence of Alcohol Consumption Among Workers:**

In our study 57 %, workers are taking alcohol as compared to 43% workers who have never consumed alcohol. Country made liquor was used by 40% of manhole workers and by 20% of other class IV workers. Manhole workers (68%) consume more alcohol, both country and english liquor, in comparison to other class four workers (46%) which is statistically significant.

**B) Audit Category of Workers Having Alcohol:**



Prevalence of alcohol is 57% in study population. Manhole workers are having 34% and other class IV workers are having 23% of alcohol use. 71% of manhole workers and 52% of other class four workers are having alcohol dependence.

**C) Alcohol Frequency Per Week:** In our study, manhole workers consume more alcohol in more than 3 days per week in comparison to other class four workers.

Manhole workers have 4.62±1.82 days and other class IV workers have 3.96±1.71 days.

**D) Money Spending Per Week (Inr) Among Workers Taking Alcohol:**

In our study 79% manhole workers and 65% other class four workers spend less than thousand INR per week behind alcohol, while 21% manhole workers and 35% otherclass four workers spend more than thousand INR perweek.

**E) Hours Spent for Alcohol Use Per Week among Workers Taking Alcohol:** In our study, manhole workers spend more hours with average of 13.5 hours for alcohol use per week in comparison to other

class four workers who spent only 9 hours per week. (stat. sig. p=0.004)

Pearson’s correlation between audit score and hours spent for alcohol use shows high significance (p=0.000)

**Correlations:**

		<b>Audit score</b>	<b>Hours spent behind alcohol</b>
Audit score	Pearson Correlation	1	.709**
	Sig. (2-tailed)		.000
	N	57	57
Hours spent behind alcohol	Pearson Correlation	.709**	1
	Sig. (2-tailed)	.000	
	N	57	57

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

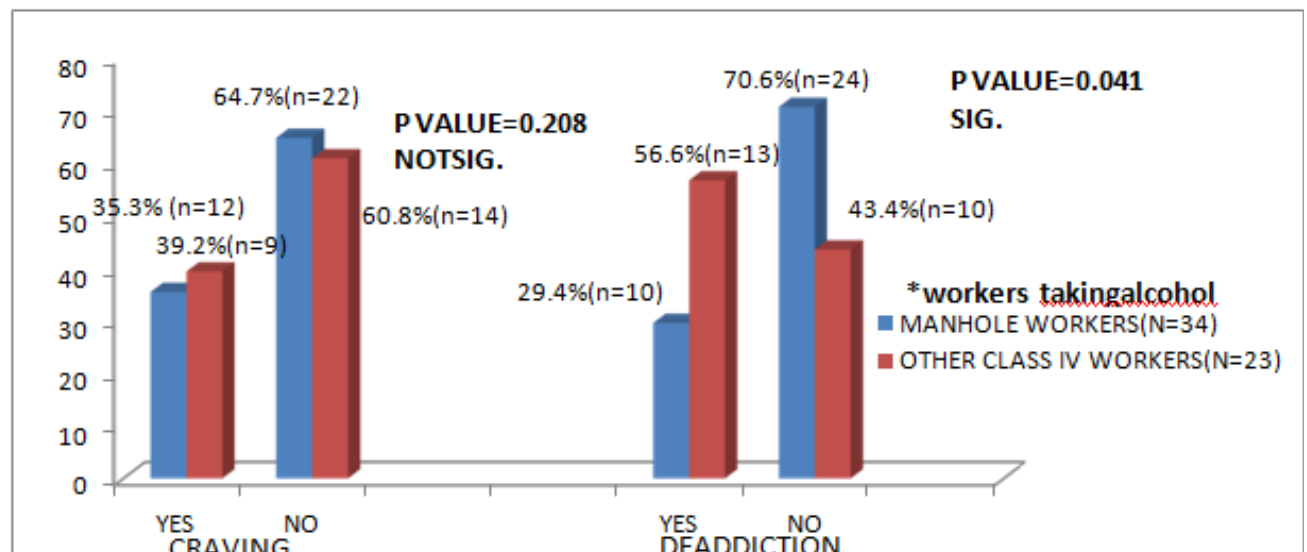
**F) Duration of Years Spent for Alcohol Consumption:** According to data, manhole workers have 12.32±4.45 years spent for alcohol consumption and other class IV workers have 11.0± 6.63 years. Pearson’s correlation between years of alcohol and age shows significant result as age progresses use of alcohol consumption increases. Workers who has hazardous pattern of drinking show significant result of more years behindalcohol.

(38%) in comparison to other class four workers (17.64%) The difference is not statistically significant, which could be because of small sample size. Our result also shows more physical problems in manhole workers (44.11%) in comparison to other class IV workers (21.73%). Same in medico legal issues, manhole workers were having 26.47% in comparison to other class IV workers were having 17.39%.

**G) Hazards of Alcohol:** Our results show more problems that are psychological in manhole workers

In occupational hazards, manhole workers (32.35%) and other class four workers (21.73%) almost equal results.

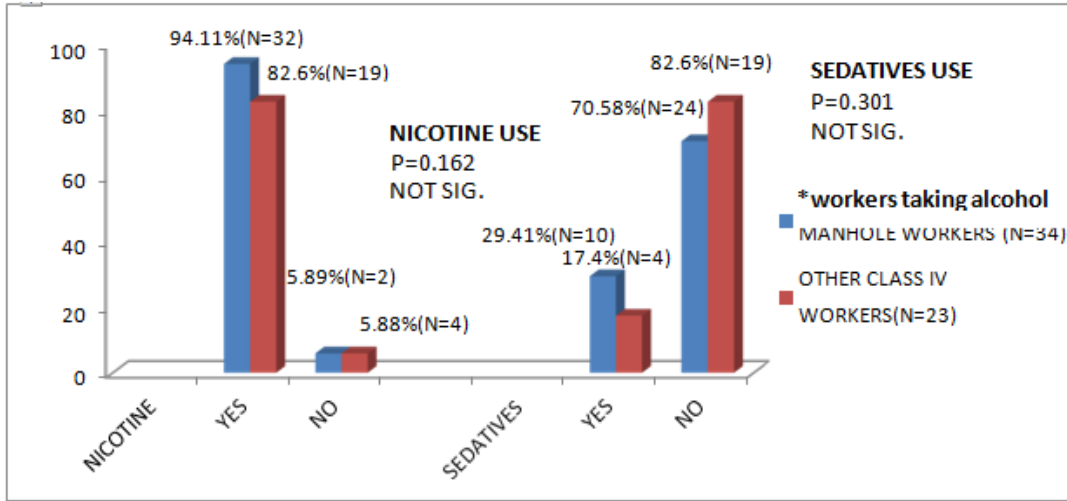
**H) Fators Associated with Alcohol Use:**



In our research 35% manhole workers and 39.2%, other class four workers admit that they have craving for alcohol. Data is not statistically significant. While 29.94% manhole worker and 56.6% other class IV, workers go through deaddiction.

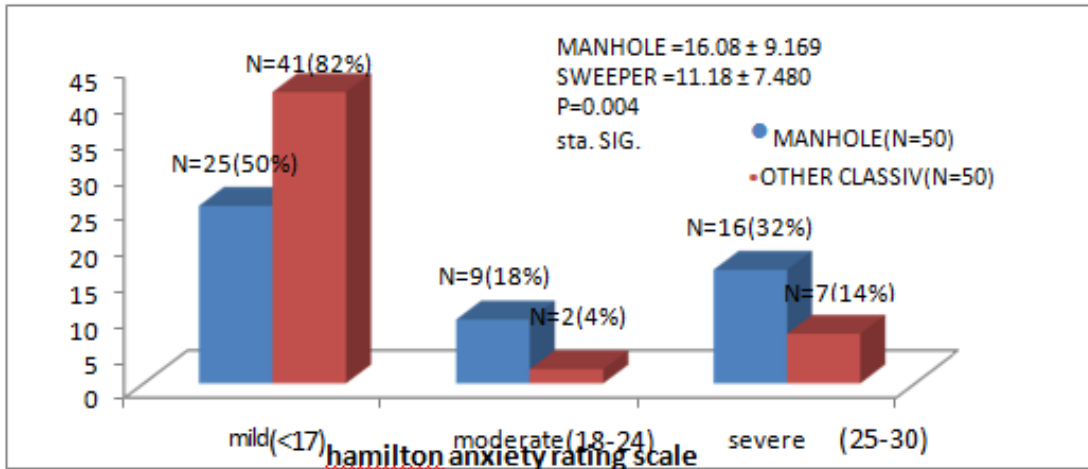
**I) Use of Other Substances in Alcoholic Workers:** In our research 94%, alcoholic manhole workers have also use of nicotine as compared to 82% other class four workers had nicotine use along with

alcohol. Use of sedatives is 29.4% in MANHOLE workers who also consumes alcohol and only 17.1% other class four workers having use of alcohol. Data is not statistically significant. So my study finding shows clearly that more number of alcoholic manhole workers are using concomitant nicotine (94% vs. 82%) and sedatives also (29.41%vs 17.4%) in comparison to other class IV workers. (though it is not statistical significant). In total population 74%, workers were having tobacco use and only 14% have sedatives use.



**4) Assessment of Severity of Anxiety among Both Groups of Workers:** My study shows,32% manhole workers as compared to 14% of other class IV

workers experiencing severe anxiety symptoms, which is statistically significant difference(p=0.004).



**B) Severity of Anxiety among Workers Having Alcohol:** In our research, use of alcohol and anxiety has a significant correlation. Mainly in manhole workers, 47% of them shows severe anxiety with concurrent alcohol use as compared to 26% of other class IV workers had

severe anxiety. (stat. sig.p=0.04).

**III) Depression:**

**A) Depression in Both Groups of Worker:** In our research, 72% of manhole workers and 44% of other class

four workers are having depression in study population. (STAT SIG. P=0.024) Among all workers 38% manhole workers showing severe depression as compared to only 16% other class four workers. (STATSIG.P=0.024). So this result shows that manhole workers having more depression than other group. (p=0.024)

### **B) Depression in Both Groups of Workers**

**Taking Alcohol:** As my study, result suggests 94% alcoholic manhole workers and 78% alcoholic other class IV workers are having significant depression. (Statistically significant. (p=0.000). It means that only 5.88% manhole worker and 21.73% other class IV workers having concurrent alcohol use not having depression. 55% manhole workers and 34% other class four workers have severe depression who consume regular alcohol. This result is statistically significant. (p=0.000)

## **Discussion**

One hundred workers from the semi-government and government organization of urban area, in Ahmedabad were interviewed for general socio-demographic profile and for depression, anxiety, prevalence, and pattern of alcohol use by using semi-structured assessment instrument.

Our study results show that as age increases, audit score also increases. Pearson's correlation  $p=0.005$  (significance). Our findings are similar to the studies done by Wan-ju- chang et al<sup>(10)</sup> shows that alcohol drinkers were having  $42\pm 9.2$  years of age and According to Ghosh et al<sup>(11)</sup>. The consumers' mean age accounted for  $31.4\pm 10.8$  years. Though sociodemographic variables like age, education and socioeconomics that us are not showing any statistical significant difference, the result is significant for marital status.

In manhole workers 20% were divorced as compared to only 4% other class IV workers were divorced. This shows that divorce is more in manhole workers as compared to class IV workers. Data is statistically significant ( $p=0.011$ ), similar data found in other studies by Yingting Xiao et al<sup>(12)</sup> and Thomas Lund et al<sup>(13)</sup> showed that people who work as waste collectors and working in municipality had a high rate of divorce (22.25%) and (19.2%) respectively.

Most of the workers (86%) were having low education and low income. This could be because of high expenses as compared to their income. Number of family

members and number of earning members has significant importance in their overall income. Similar results were found in studies by Scarlett et al<sup>(14)</sup> and Vaidya et al<sup>(15)</sup> which also show that lower socioeconomic status is related to sanitation job.

Manhole workers (68%) have more alcohol use, both country and English liquor in comparison to other class four workers (46%) which is statistically significant. Reason of more country made liquor used by workers may be ban on alcohol in Gujarat. The consumption and sale of alcohol is banned in Gujarat with regards to the ideological context of Mahatma Gandhi.<sup>(16)</sup> It has further led to a proliferation of illegal liquor dens, whose home-made brew is mostly consumed by those from low income families like manhole workers who can't afford high priced drinks available outside the state<sup>(17)</sup> A study done by Rangamani S et al<sup>(18)</sup>, shows intake of alcohol was away of coping with cleaning filthy sewage which is inhuman task and to forget their physical problem, similar to our findings.

Manhole workers consume more alcohol in more than 3 days per week in comparison to other class four workers. Manhole workers have  $4.62\pm 1.82$  days and other class IV workers have  $3.96\pm 1.71$  days. Similarly, a study by Wechsler H et al shows, that workers consumed alcohol one to two days in a week, in the past one year, with heavy drinking, adding up to consumption of more than 5 drinks in about 50% of all males. Further, this was correlated with adding up to more than 4 drinks in every occasion, once a month, amongst 32.5% of all females. However, for the previous year about 14.3% abstained from alcohol. Some respondents reported in past month consumed alcohol just before going to work or after work. Thus, after-work or non- workday drinking is highly significant.<sup>(19)</sup> Compared to manhole workers other class IV workers spend more money as compared to manhole workers. This could be due to good quality type of liquor used by them. This variable has not been studied in previous studies.

In our study manhole workers spend more hours with average of 13.5 hours for alcohol use per week in contrast to other class four workers who spent only 9 hours per week. Pearson's correlation between audit score and hours spent for alcohol use shows high significance ( $p=0.000$ ). Studies suggest that increasing audit score in manhole workers implies hazardous type of drinking. In addition, it may be one of the major reasons for increased hours spent for alcohol use in manhole

workers. There were no studies, which considered this particular variable. Similar findings and reasons might be reason for more hours spent in alcohol consumption by manhole workers than other class IV workers.

Our results show more problems that are psychological in manhole workers (38%) as compared to other class four workers (17.64%). This could be because of small sample size, more alcohol dependence.<sup>(20)</sup> Our result also shows more physical problems in manhole workers (44.11%) in contrast to other class IV workers (21.73%), this may also be due to small sample size. Similarly, manhole workers were having more medico legal issues in contrast to other class IV workers. According to Poldugro et al<sup>(21)</sup> One of key factor in some instances of crime is substance abuse. There is no study showing hazards of alcohol among manhole workers and other class four workers. But Schoepf et al<sup>(22)</sup> found that more deaths in hospital admitted patients with alcohol dependence are due to different medical comorbidities.

Study result shows that most of the alcoholic workers have more frequency of consumption of alcohol and because of that, they deny for craving because of constant availability of alcohol. Manhole workers were having less craving as they use to get alcohol more frequently than other class IV workers do. David J. Drobos et al<sup>(23)</sup> found that Craving for alcohol is common among alcohol-dependent people. While 29.94% manhole worker and 56.6% other class IV, workers go through deaddiction. That shows less motivation among manhole workers to quit alcohol. This could be because of their working condition lead to use of alcohol due to dirt and unhygienic environment.

Our study finding shows clearly that more number of alcoholic manhole workers are using concomitant nicotine (94% vs. 82%) and sedatives also (29.41%vs 17.4%) in contrast to other class IV workers. (though it is not statistical significant).

Meanwhile, Barret et al<sup>(24)</sup> has proposed important relation between smoking and enhancement of pleasurable impacts over drinking. Further, Rose et al<sup>(25)</sup> has inversely demonstrated that pleasure from cigarette smoking can be enhanced by consumption of alcohol. A similar study also reports that pleasurable effects can be obtained through interaction between alcohol and the nicotinic receptors<sup>(26)</sup>.

Study showed statistically significant number

manhole workers in contrast to other class IV workers experiencing severe anxiety symptoms. Similar studies by Fleming et al<sup>(27)</sup>

and Hasin et al<sup>(28)</sup> were showing same results. The reason associated could have been because of the fact that manhole workers are more prone towards developing serious accidents in the form of experiencing falls or slips, oxygen deprivation, asphyxiations, entrapments, heat strokes, explosions and even dangerous gas poisonings. That can produce more anxiety compared to streets weepers. Because of their work, they are socially isolated and untouchable in many places in India. That also shows significant anxiety symptoms related to their social disgrace. In our study, more numbers of manhole workers showed severe anxiety with concurrent alcohol use compared to other class IV workers. Similar result by Hasin et al<sup>(28)</sup> reports that alcohol dependence is significantly associated with anxiety disorders in comparison to alcohol abuse. Gentil et al<sup>(29)</sup> showed panic disorder typically has a relatively large association with AUDs (odds ratio [OR] =1.7–4.)

Result shows that manhole workers having more depression than other group. ( $p=0.024$ ) As my study, result suggests 94% alcoholic manhole workers and 78% alcoholic other class IV workers are having significant depression. According to MM Darshan et al<sup>(30)</sup> Gavin et al<sup>(5)</sup> life style, economical and physical hazard, social stigma, occupational risk factors and jobs stress have great impact on their psychological risk factors. They also state that use of substance and comorbidities has important effect on their poor lifestyle.

## Conclusion

Manhole workers in comparison to other class IV workers are significantly involved with considerable inhuman and hazardous working circumstances. Their working environment compels them to be more prone towards developing anxiety, depression and substance related disorders, especially alcohol use disorders. Thus, Government bodies must look deeper into the varied aspects of conflicted areas regarding improvisation of sanitation, physical health and mental health of these workers, thereby inflicting a cover over previous loopholes in current action.

## Limitations of the Study:

1. It is a cross sectional study and not a prospective study. Hence, this study is not applicable for

analyzing behavior over a period of time and also does not help in determining cause and effect either.

2. All workers had reported use of alcohol subjectively; hence there are possibilities that some of the workers might not be revealing complete truth and details about alcohol use.
3. The sample size is small, thereby increasing the errors and reducing the power of the study.
4. In our study only from urban area, semi government and government organization were considered so further study is required for finding out alcohol use pattern and anxiety/depression in class four workers in private sector and also in rural area.

**Ethical Clearance:** Taken from Institutional Ethics Committee

**Source of Funding:** Self

**Conflict of Interest:** Nil

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