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Research Article

Alcohol use among patient with Tuberculosis: Findings from Andaman and Nicobar Islands, India

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A B S T R A C T

Introduction: Alcohol consumption is a global issue with diverse cultural, social, and economic implications. It affects individuals and communities in multifaceted ways, ranging from social behaviors to health outcomes. There is a paucity of information on the association between alcohol use and tuberculosis (TB) patients in the Andaman and Nicobar Islands.

Aim: To assess the prevalence and associated factors of alcohol use among TB patients in the Andaman and Nicobar Islands.

Materials and Methods: A cross-sectional survey was carried out among TB patients to collect information on demographics, education, occupation, type of TB, and smoking status. Alcohol use was assessed using the WHO-recommended Alcohol Use Disorder Identification Test (AUDIT). Logistic regression analysis was performed to identify factors associated with alcohol use among TB patients.

Results: Out of 274 TB patients, 17% (46/274) were identified as alcohol users. A higher proportion of working patients reported alcohol use compared to non-working patients. Alcohol use was significantly higher in those employed in the organized sector (OR = 13.4; 95% CI: 3.00–59.86; $p < 0.01$) and unorganized sector (OR = 10.6; 95% CI: 2.43–46.23; $p < 0.01$). Logistic regression analysis showed that alcohol use was 2.2 times more common among TB patients with depression compared to those without (AOR = 2.26; 95% CI: 1.06–4.8; $p < 0.05$). Additionally, alcohol use was more prevalent among smokers than non-smokers (AOR = 2.98; 95% CI: 1.21–7.34; $p < 0.05$).

Conclusion: This study provides the first evidence of alcohol use among TB patients in the Andaman and Nicobar Islands. The key findings indicate that alcohol users often exhibit dual habits of smoking and alcohol consumption, along with dual burdens of TB and depression. There is a clear need for targeted intervention strategies addressing alcohol use among TB patients to improve treatment outcomes and overall well-being.

Keywords: Tuberculosis, Alcohol dependence, Substance Use, Social Work

Introduction

Globally, 10% of incident tuberculosis (TB) cases are attributed to alcohol intake.[1] Because of the impact on the immune system and underlying alcohol-related conditions, individuals who consume alcohol are more likely to develop active TB and are more susceptible to reinfection of TB.[2] Patients with tuberculosis who also consume alcohol are more likely to have poor treatment outcomes due to altered pharmacokinetics of TB medications.[2, 3] Alcohol use was found to be a significant predictor of drug- susceptible and resistant TB treatment outcomes in a meta-analysis of drug susceptible and resistant TB. Alcohol use was linked to an increased risk of unfavourable treatment outcomes such as loss to follow-up, treatment failure, and death.[4] In addition to these pathological implications, studies have emphasised the importance of alcoholic individuals' social mixing patterns in resource-poor settings, which puts them at a disadvantage with high transmission risk.[5] Previous study findings have highlighted the importance of alcoholic recreation groups and drinking places in amplifying TB transmission at community settings outside households.[6,7]

India, which is home to a quarter of the world's TB burden, also shares the highest proportion of people consuming alcohol or having alcohol use disorder.[8] Studies in India have assessed the association of TB and alcohol in mostly urban settings and predominantly among populations residing in the mainland. There is a scarcity of data on alcohol prevalence among TB patients in the Andaman and Nicobar Islands, India. Andaman and Nicobar Islands, an archipelago of 572 islands in the Bay of Bengal, which is home to six primitive tribes and immigrants from various parts of India's mainland. The Nicobar Islands have been noted for a higher incidence of TB due to congested living conditions and higher prevalence of alcohol use.[9] Still, there are no studies which assessed alcohol use among TB patients treated under the National TB Elimination Programme (NTEP), Andaman and Nicobar Islands in India.[10]

Materials and Methods

Study Setting

The Andaman and Nicobar Islands is a Union Territory located in the Bay of Bengal, 1200 kilometers from the mainland of India, at longitude 92°-94° east and latitude 6°-14° north.[11] This area is home to over 350,000 people from six aboriginal tribes. The NTEP, through the support of the National Health Mission (NHM), provides TB care and management services free of cost. It has nine Designated Microscopic Centers (DMCs) which diagnoses 450 to 480 smear positive cases annually. All Primary Health Centre (PHCs) and Community Health Centre (CHCs) provide free treatment to patients with a TB diagnosis for a period of six to eight months.

Study Area

Seven TUs in the Andaman and Nicobar Islands participated in this study. Among these TUs, five were from rural (Ferrargunj, Little Andaman, Rangat, Mayabunder and Diglipur), one from urban (Port Blair) and one from tribal (Car Nicobar). The study covered only the government health system, which consists of nineteen PHCs, four CHCs, five Urban Health Centre (UHCs) and it also covered areas of Health and Wellness Centre (HWCs). 274 study participants were recruited by using the probability proportional to size (PPS) sampling method in which the number of participants has been included based on caseloads by applying the random sampling technique.

Study Population

The study included newly diagnosed pulmonary tuberculosis (TB) patients (both smear positive and smear negative), as well as extra pulmonary TB patients registered and taking treatment for TB under the NTEP of the Union Territory of Andaman and Nicobar Islands between July 2021 and December 2022. The eligibility criteria for the study were to include TB patients, both male and female aged, above 18 years, the chronically ill patients and patients with HIV positives were excluded from the study.

Instruments for data collection

The tool used for the data collection was a pre-coded, semi-structured interview schedule. The data collection tool included two parts. The first part covered the information on patient demographic characteristics such as age, gender, family size, marital status and duration of stay. In addition, information such as education, occupation, type of TB and smoking habits was also included in the interview schedule. In the second part, we evaluated alcohol consumption using the WHO-recommended Alcohol Use Disorder Identification Test (AUDIT) interview version (World Health Organisation 2001). In addition to that, we also used modified Kuppuswamy socio- economic status (SES) in this study population.

Data Collection

The investigator (Master in Social Work background) interviewed all the eligible patients enrolled in the study after obtaining written informed consent. Following completion of the intensive phase of treatment (two to three months), the patients were interviewed for the study. Patients were informed in their local language (Hindi) about the purpose of the study and assured of the confidentiality of the information collected from the patients. The actual interview was conducted at the respective government health facilities (PHCs, CHCs and UHCs). The information collected on alcohol use and smoking habits during the interview was cross checked with the patient's treatment card, which was available at the respective health Centre.

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Data Management

Data were entered into Microsoft Excel Spreadsheets (MS Excel Version 10) after being carefully examined, and SPSS version 22.0 was used to analyse the data. The descriptive statistics with numbers and percentages were used in the study. In order to find the factors that predict alcohol consumption among TB patients, we also employed logistic regression techniques and the bivariate chi- square test. When calculating the adjusted odds ratio, a p-value <0.05 is deemed statistically significant.

Ethical Approval The study was approved on 2nd November 2021 by the Institutional Ethics Committee of the ICMR-Regional Medical Research Centre, located in Port Blair. The NTEP of Andaman and Nicobar Islands granted necessary approvals. During the interview, all the patients with TB were counselled, provided with necessary support to quit alcohol use and motivated to complete the treatment.

Results

The sociodemographic characteristics of the study population are described in Table-1. The age group of 18 to 35 years old comprises the majority of the TB population, which is a more economically and reproductively active segment of the population affected by TB. Of 274 patients, 72% were educated, 33% were unemployed and 43% were working in the unorganised sectors. The majority of the patients have been living in the Andaman and Nicobar Islands for a long time (more than 20 years). Among the study population, 29% were unmarried and 9% were widowed. With respect to socio-economic status measured by the Kuppusamy scale, 41% were lower economic status, 29% were middle socio-economic status and 30% were upper socio-economic status.

Table 1.Profile of patients with TB in Andaman and Nicobar Islands

Socio-demographic profile	No	%
Age in years		
18-35	115	42
36-45	59	22
46-55	47	17
>55	53	19
Occupation		
Not Working	81	30
Organized Sector	75	27
Un Organized Sector	118	43
Education		
Uneducated	76	28
Educated	198	72
Living in Islands (years)		
20	63	23
29	47	17
30-38	60	22
39-47	51	19
48-65	53	19
Marital Status		
Unmarried	79	29
Married	170	62
Widowed	25	9
Socio Economic Status		
Lower Level	112	41
Middle Level	80	29
Upper Level	82	30
Total	274	100

Alcohol consumption was present in 17% (46/274) of the 274 TB patients who participated in this investigation. Table-2 listed the factors connected to alcohol consumption in TB patients. In univariate analysis it was found that a significantly higher proportion of working patients have alcohol use when compared to not working patients (organised sector OR=13.4; 95% CI 3.00-59.86; p<0.01; unorganised sector OR=10.6; 95% CI 2.43-46.23; p<0.01). It was also found that a significantly higher proportion of patients who are staying for a long time in the Islands used alcohol (30-38 years OR=2.89; 95% CI 1.02-8.11; p<0.05; 39-47 years OR=3.59; 95% CI 1.26-10.19; p<0.05). A significantly higher proportion of patients with the habit of smoking tobacco have also used alcohol (OR=2.93; 95% CI 1.37-6.25; p<0.01).

Alcohol use was found to be 2.2 times more common in people with TB and depression than in people without depression (Figure-1)

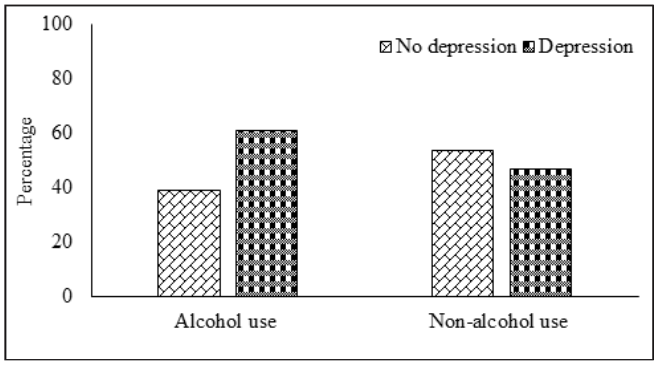

Figure 1.Depression among TB patients with alcohol use in Andaman and Nicobar Islands

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According to multivariate logistic regression analysis (AOR 2.26, 95% CI 1.06-4.8; p<0.05) individuals who were in the middle age group (46-55) were more likely to have alcohol use when compared to young age individuals between 18-25 years (AOR 5.09, 95% CI 1.26-20.42; p<0.05). Individuals who were working in the organised and unorganised sectors were more likely to have alcohol use disorder when compared to individuals who were unemployed (organized sector AOR 10.58; 95% CI 2.2-50.29; p<0.01 & unorganized sector AOR 8.97; 955 CI 1.88-42.7; p<0.01). When compared with education, those with higher levels of education had a higher probability of alcohol use than others (AOR 3.73; 95% CI 1.30-10.72; p<0.05). People who spent a significant amount of time living on islands were found to consume alcohol at higher rates than people who did not (30-38 years of stay AOR 3.69; 95% CI 1.10-12.33; p<0.05). Alcohol consumption was more closely correlated with smokers than non-smokers (AOR 2.98; 95% CI 1.21-7.34; p<0.05).

Discussion

Information regarding alcohol consumption in the general public and specific populations, like TB patients in islands, is scarce. According to a study done on adults over the age of 14 in the Andaman and Nicobar Islands, the overall prevalence of alcohol consumption was found to be over 6.0% in females and 35% in males. It is also reported that among alcohol users, 25% were alcohol dependents.[10] According to a different study on alcohol dependence and its risks, alcohol consumption in the Andaman and Nicobar Islands is similar to that in mainland India. Table 2 Additionally, it was reported that just 17.7% of men in the Andaman and Nicobar Islands are heavy drinkers. It was observed that within the Andaman and Nicobar Islands, there are significant disparities in the prevalence and consumption patterns of alcohol among various social groups. When the alcohol use was compared to the other parts of the country the range of 20% to 30% of the TB patients consume alcohol.[12-14] However, no research on alcohol consumption among TB patients in the Andaman and Nicobar Islands has been done. The salient finding of the current study in the Andaman and Nicobar Islands is that 17% of TB patients also used alcohol. There is a need to plan for the necessary structured interventions to be taken for addressing alcohol habits in TB care.[13]

Since 1785, there has been evidence linking alcohol consumption and TB.[15] Additionally, it has been shown that drinking alcohol greatly raises the risk of TB.[2, 16] Alcoholism has been shown to be a significant contributing factor to treatment non-adherence in TB care.[17] Alcohol consumption has been linked to 10–20% of all TB deaths globally and has been found to be a significant risk factor for both getting TB disease and having worse results.[18, 19] This may be since alcohol users may have behavioral mechanisms, poor treatment adherence, a higher chance of loss to follow-up, biological mechanisms, alcohol induced immune responses and poor drug absorption. To guarantee treatment completion, it is imperative to create a workable, acceptable alcohol intervention programme. Additionally, calls for coordinated TB-alcohol collaborative activities in India were suggested.

The other important finding is that alcohol users were higher among working TB patients, particularly those who are working in the unorganised sectors. There is strong evidence linking working hours and alcohol consumption. According to a systematic review and meta-analysis, a significant factor that has been reported is the significant correlation between long working hours and an increased likelihood of alcohol use.[19] Various factors, including the workplace, friends, social networks, and personal traits, could be responsible for the correlation between extended work hours and alcohol consumption. Alcohol consumption may reduce stress brought on by job demands and working environment, which could be one explanation. Further, the majority were from the unorganised sector, workload, integration of employees and supervision by the work organisation may be the factors for higher alcohol use.[20] Alcohol misuse in the middle-class workforce is a serious problem that has an impact on both employers and workers. It was consistent with our finding that workers in the middle class drink more alcohol than workers in other occupational groups.[21] It has also been reported that there is a wage gap of about 20% between heavy and moderate drinkers and those who do not drink as much.[10]

It was also found that individuals with TB and depression were 2.2 times more likely to have alcohol use when compared to non-depressed individuals. Stress due to the disease, isolation, not engaging in entertainment activities, and not getting involved in social networks and gatherings lead to depression and demand TB patients use alcohol. Studies in the past had underscored that alcohol use disorder is a comorbidity with depression among TB patients which results from anxiety and mental disturbances associated with TB medication and its side effects. Also, TB remains a highly stigmatised diseases which again causes low self-esteem and leads to poor mental health status which could drive alcohol use among patients. In addition, it was also reported that the alcohol could be the high-risk factor for TB patient's poor treatment outcomes.

In this current study, it was also found from the logistic regression analysis that those who are staying on the Island for a long duration have more alcohol users. It is a known fact that people in tribal areas are consuming locally made alcohol, namely handia and toddys. Since the alcohol is not allowed to be sold, the non-availability of factory products, and the high price, people make their own locally made

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alcohol. This practice is also a concern in Nicobar Island.

On the other hand, the study found factors such as age, education and working status are also associated with alcohol use among TB patients. All these demographic features could be linked to alcohol use using a common factor, which is socialisation. Studies in mainland India among TB patients show that socialisation happening at the workplace and educational settings facilitates alcohol use which in turn drives TB transmission. Likewise, this study also predicts that individuals with TB who have the high chances of socialisation (i.e. educated, middle aged and working men) are more likely to have alcohol use disorder. Unlike the isolated Nicobar Island, whose alcohol use could be explained by the socio-cultural history, the socialisation driven by educational and occupational prospects could be the driving force for alcohol consumption among TB patients due to peer pressure and norms.

Table 2.Factors associated with alcohol use among patients with TB in Andaman and Nicobar Islands

Characteristics	Total No	Alcohol use No	%	OR	95% CI	P value	AOR	95% CI	P value
Age in years									
18-35	115	14	12	1	-	-	1	-	-
36–45	59	14	24	2.24	0.98-5.09	0.05	2.32	0.65-8.23	0.19
46–55	47	11	23	2.2	0.91-5.29	0.07	5.09	1.26-20.42	0.02
Above 55	53	7	13	.09	0.41-2.90	0.85	1.59	0.35-7.22	0.54
Occupation									
Not working	81	2	2	1	-	-	1	-	-
Organized Sector	75	19	25	13.4	3.00-59.86	0.00	10.58	2.22-50.29	0
Un Organized Sector	118	25	21	10.61	2.43-46.23	0.00	8.97	1.88-42.70	0
Education									
Uneducated	76	8	11	1	-	-	1	-	-
Educated	198	38	19	2.01	0.89-4.55	0.09	3.73	1.30-10.72	0.01
Living in Islands (yrs)									
20	63	6	10	1	-	-	1	-	-
29	47	7	15	1.66	0.51-5.31	0.39	2.48	0.65-9.35	0.17
30-38	60	14	23	2.89	1.02-8.11	0.04	3.69	1.10-12.33	0.03
39-47	51	14	27	3.59	1.26-10.19	0.01	2.48	0.65-9.39	0.17
48-75	53	5	9	0.98	0.28-3.44	0.98	0.85	0.17-4.14	0.84
Marital status									
Unmarried	79	13	16	1	-	-	1	-	-
Married	170	29	17	1.04	0.51-2.13	0.90	0.87	0.31-2.40	0.79
Widowed	25	4	16	0.96	0.28-3.28	0.95	0.69	0.14-3.28	0.64

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Socio Economic Status									
Lower level	112	19	17	1	-	-	1	-	-
Middle Level	80	16	20	1.22	0.58-2.55	0.59	1.06	0.44-2.55	0.89
Upper Level	82	11	13	0.75	0.12-0.33	0.50	0.78	0.29-2.03	0.61
Smoking									
Non Smoking	234	33	14	1	-	-	1	-	-
Smoking	40	13	33	2.93	1.37-6.25	0.00	2.98	1.21-7.34	0.01
TB Type									
PTB	132	17	13	-	1	-	1	-	-
EPTB	142	29	20	1.73	0.90-3.33	0.09	1.06	0.48-2.31	0.87
Anxiety/Depression									
No depression	140	18	13	-	1	-	1	-	-
Depression	134	28	21	1.79	0.93-3.41	0.07	2.26	1.06-4.84	0.03

Limitations

Since the findings of this study are based on interviews of patients, it is likely that patients had difficulty in answering about their habitual alcohol use. This information is more sensitive there may be a bias. Care was taken to overcome these difficulties through medical social workers by providing motivational interviewing to make them to feel comfortable to answer all these questions. During the interview the social worker clarified their doubts and provided need-based counselling to the patients to abstain from alcohol use, complete the treatment and avoid unnecessary worries.

Conclusions

This study provides evidence for the first time on alcohol use among TB and the factors which are driving alcohol use among TB patients in the most hard- to- reach and vulnerable setting of India. The Andaman and Nicobar Islands TB patients' alcohol use could be addressed by prioritising and developing interventions based on the factors that were identified. Together, the Andaman and Nicobar Islands must engage in collaborating with NTEP for de-addiction programmes for alcohol to fortify the TB control programme and accomplish the goals of TB elimination.

Conflicts of Interest: None

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process: None

References

1. Imtiaz S, Shield KD, Roerecke M, Samokhvalov AV, Lönnroth K, Rehm J. Alcohol consumption as a risk factor for tuberculosis: meta-analyses and burden of disease. European Respiratory Journal. 2017 Jul 13;50(1). [Google Scholar] [Pubmed]
2. Lönnroth K, Williams BG, Stadlin S, Jaramillo E, Dye C. Alcohol use as a risk factor for tuberculosis–a systematic review. BMC public health. 2008 Dec;8:1-2. [Google Scholar] [Pubmed]
3. Rehm J, Samokhvalov AV, Neuman MG, Room R, Parry C, Lönnroth K, Patra J, Poznyak V, Popova S. The association between alcohol use, alcohol use disorders and tuberculosis (TB). A systematic review. BMC public health. 2009 Dec;9:1-2. [Google Scholar] [Pubmed]
4. Ragan EJ, Kleinman MB, Sweigart B, Gnatienko N, Parry CD, Horsburgh CR, LaValley MP, Myers B, Jacobson KR. The impact of alcohol use on tuberculosis treatment outcomes: a systematic review and meta-analysis. The International Journal of Tuberculosis and Lung Disease. 2020 Jan 1;24(1):73-82. [Google Scholar] [Pubmed]

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202517

5. Classen CN, Warren R, Richardson M, Hauman JH, Gie RP, Ellis JH, van Helden PD, Beyers N. Impact of social interactions in the community on the transmission of tuberculosis in a high incidence area. Thorax. 1999 Feb 1;54(2):136-40. [Google Scholar] [Pubmed]
6. Žolnir-dovč M, Poljak M, Eržen D, Šorli J. Molecular epidemiology of tuberculosis in Slovenia: results of a one-year (2001) nation-wide study. Scandinavian journal of infectious diseases. 2003 Dec 1;35(11-12):863-8. [Google Scholar] [Pubmed]
7. Diel R, Schneider S, Meywald-Walter K, Ruf CM, Rüsch-Gerdes S, Niemann S. Epidemiology of tuberculosis in Hamburg, Germany: long-term population-based analysis applying classical and molecular epidemiological techniques. Journal of Clinical Microbiology. 2002 Feb;40(2):532-9. [Google Scholar] [Pubmed]
8. Kan CK, Ragan EJ, Sarkar S, Knudsen S, Forsyth M, Muthuraj M, Vinod K, Jenkins HE, Horsburgh CR, Salgame P, Roy G. Alcohol use and tuberculosis clinical presentation at the time of diagnosis in Puducherry and Tamil Nadu, India. PloS one. 2020 Dec 17;15(12):e0240595. [Google Scholar] [Pubmed]
9. Thiruvengadam K, Krishnan R, Muniyandi M. The Prevalence of Self-Reported Tuberculosis in the Andaman and Nicobar Islands, India: Evidence from the NFHS-IV and V. Tropical Medicine and Infectious Disease. 2023 Oct 3;8(10):464. [Google Scholar] [Pubmed]
10. Manimunda SP, Sugunan AP, Thennarasu K, Pandian D, Pesala KS, Benegal V. Alcohol consumption, hazardous drinking, and alcohol dependency among the population of Andaman and Nicobar Islands, India. Indian journal of public health. 2017 Apr 1;61(2):105-11. [Google Scholar] [Pubmed]
11. Down to Earth. Andaman and Nicobar: Beyond India's landmass [Internet]. New Delhi: Down to Earth; [cited 2021 May 12]. Available from: https://www.downtoearth.org.in
12. Thummar PD, Rupani MP. Prevalence and predictors of hazardous alcohol use among tuberculosis patients: The need for a policy on joint tuberculosis-alcohol collaborative activities in India. Alcohol. 2020 Aug 1; 86:113-9. [Google Scholar] [Pubmed]
13. Veerakumar AM, Sahu SK, Sarkar S, Kattimani S, Govindarajan S. Alcohol use disorders among pulmonary tuberculosis patients under RNTCP in urban Pondicherry, India. indian journal of tuberculosis. 2015 Jul 1;62(3):171-7. [Google Scholar] [Pubmed]
14. Ray R. The extent, pattern and trends of drug abuse in India: National survey. Ministry of Social Justice and Empowerment, Government of India & United Nations Office on Drugs and Crime, Regional Office for South Asia; 2004. [Google Scholar]
15. Rush B. An inquiry into the effects of ardent spirits upon the human body and mind: with an account of the means of preventing, and of the remedies for curing them. New Brunswick (NJ): Lewis Deare; 1813.
16. Kolappan C, Gopi PG, Subramani R, Narayanan PR. Selected biological and behavioural risk factors associated with pulmonary tuberculosis. The International Journal of Tuberculosis and Lung Disease. 2007 Sep 1;11(9):999-1003. [Google Scholar] [Pubmed]
17. Thomas B, Watson B, Senthil EK, Deepalakshmi A, Balaji G, Chandra S, Manogaran C, Nagarajan K, Ovung S, Jayabal L, Swaminathan S. Alcohol intervention strategy among tuberculosis patients: a pilot study from South India. The international journal of tuberculosis and lung disease. 2017 Aug 1;21(8):947-52. [Google Scholar] [Pubmed]
18. Simou E, Britton J, Leonardi-Bee J. Alcohol consumption and risk of tuberculosis: a systematic review and meta-analysis. The International Journal of Tuberculosis and Lung Disease. 2018 Nov 1;22(11):1277-85. [Google Scholar] [Pubmed]
19. World Health Organization. Global status report on alcohol and health 2018. World Health Organization; 2019 Feb 14. [Google Scholar] [Pubmed]
20. Virtanen M, Jokela M, Nyberg ST, Madsen IE, Lallukka T, Ahola K, Alfredsson L, Batty GD, Bjorner JB, Borritz M, Burr H. Long working hours and alcohol use: systematic review and meta-analysis of published studies and unpublished individual participant data. Bmj. 2015 Jan 13;350. [Google Scholar] [Pubmed]
21. Ling J, Smith KE, Wilson GB, Brierley-Jones L, Crosland A, Kaner EF, Haighton CA. The 'other'in patterns of drinking: A qualitative study of attitudes towards alcohol use among professional, managerial and clerical workers. BMC public health. 2012 Dec;12:1-7. [Google Scholar] [Pubmed]

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202517