# **Explorative Analysis of Factors Causing Relapse of Patients due to Alcohol within a month and three month**

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*Abstract*

Purpose: To analyze the factors that leads a patient to relapse with a month and three due to alcohol.

Background : The data used for this analysis was gathered from a local rehabilitation center, encompassing information about 329 patients. The dataset includes both categorical and numerical variables, providing insights into the patients' characteristics upon admission to the rehabilitation center. The correlation between the factors was found out using Spearman’s correlation coefficients.

Findings :A total of 329 patients were admitted and majority of them were aged between 35 and 41. 94% of the patients lived with their family, 32.2% have SSLC as their educational level, mean duration of use of alcohol 15 years.

Out of 329 male patients 74( 22.5%) relapsed within a month and 34( 10.3%) relapse within

three months For the first group the factors that have positive contribution are age(r=0.39), annual income(r=0.11), marital status(r=0.18), weight(r=0.26), family history of alcoholism(r=0.02), duration of excess use of alcohol (r=0.08), AAO for alcohol(r=0.285), psychiatric problem include paranoid idea(r=0.07), suicidal thoughts(r=0.05), depression(r=0.01), aggressive burst out(r=0.05), reason for starting alcohol being to feel better(r=0.07), to try(r=0.11). Willingness for treatment(r= -0.06). While for the other group positive factor are insomnia(r=0.197), risk level(r=0.05), average units of last drink(r=0.04), reason for starting alcohol being someone in family or friends were using(r=0.0415), work related stress(r=0.317).

Practical Implementation: The analysis of this report will help understand the factor responsible for relapse of the patients. Which help for future prevention method and proper treatment.

Keywords: Relapse, Period of Sober, Alcohol

# **Introduction**

Alcoholism is addiction of a person towards excessive alcohol consumption. At a national level, approximately 2.7 percent of the population (29 million people) are affected by alcohol dependence. Puducherry (48.3%), Punjab (44 %), Andhra Pradesh (43.5 %), and Karnataka (40.3 %). With a population size of 6.7 crore Karnataka had alcohol addict count of 94.5 lakhs. The prevalence of alcohol consumption among males witnessed a slight rise, with the proportion increasing from 28.3% to 29.2% over the specified period. Furthermore, it is noteworthy that in 2005, approximately 19% of alcohol consumers acknowledged their daily drinking habits, which saw a subsequent increase to 22% in 2015.

To address the pressing issue of alcohol addiction, the Government has established dedicated rehabilitation centers. Even after taking treatment at rehab center patients tend to relapse. About 50% of patients who received treatment relapse within 3 months. There is evidence that approximately 90 percent of alcohol dependents are likely to experience at least one relapse over the 4-year period following treatment. [1]. Therefore in this analysis we look into the factors responsible for relapse in patients.

# **Literature & Survey**

The research done in article [10] alcohol relapse is more common in the age group 31– 45 years, more among males, majority were unskilled and semiskilled workers and

belonging to lower educational status.

The study performed on 70 patients say that the mean age of patients was 41 and complete abstinence was shown by only 31% [2].

In the same study the mean age of first drink was 22 years. And Graduation was the educational status of the higher odds of relapse.

Studies conducted in Kerela shows that the average alcohol onset age decreased from 24 years to 17 years [5].

And majority of the subjects who relapse were married and live in

nuclear family[10].

Many started to consume alcohol below the age of 20 years, become dependent in the next 10 years i.e. 20 – 30 years[10].

According to the study conducted by Ghulam it was found that the reason for starting alcohol was because of friends i.e., 93% people’s reason were friends [9].

A study conducted in Vietnam say that there was a direct relation between craving, negative emotions and maladaptive copings [3]. In article [4] authors say that the reason for relapse was desire for positive mood. Recent research has highlighted the significance of a gene-environment relationship, along with biological and psychosocial factors interact to influence an individual's relapse [4]. In the article [7,6] factor such as age, religion, marital status, unemployed, poor literacy, family type, family history are associated with relapse. Article [8] conducted studies from northern India says that the factor such as withdrawal symptoms (81.3%), inability to control urges (8%), and boredom or frustration (6.6%) are the prominent factor for relapse.

In article [10] top three reason cited for alcohol consumption were Family problem(57%), Peer pressure(37%), cravings(19%).

# **METHODOLOGY**

1. ***Data Collection and Description***

The data used for this analysis was gathered from a local rehabilitation center, encompassing information about 329 patients. The dataset includes both categorical and numerical variables, providing insights into the patients' characteristics upon admission to the rehabilitation.

1. ***Data Preprocessing***

As the data was raw data, it needed some processing to be done. The methods followed are

* Handling Null values
* Overcome redundancy in data
* Spelling error handling
* Grouping of values in ranges
* One hot encoding done on categorical data

In one hot encoding the attributes having categorical data that cannot be given a specific order, or that cannot be labeled under a specific name are One hot encoded. For the simplicity of our analysis this step was use cause it converted categorical data into numerical data. Performing one hot encoding on the Colum made all its tuples as new columns of the data set.

1. ***Feature Selection***

Feature Selection is on the weighted step/process in data analysis. As the name suggest feature selection is selection of the feature that go hand – in – hand with out target variable. It involves determining which variables or attributes have the most significant impact on the target variable or the outcome of interest.

The process of feature selection helps in improving the accuracy and efficiency of predictive models by reducing the dimensionality of the dataset and eliminating irrelevant or redundant features. The feature selection on this data was done using “Select K Best”. In the Select K Best method, the goal is to select the K best features from a dataset based on their statistical significance and relevance to the target variable. On performing feature selection on our data set the count of attributes decreased from 200 to 22 attributes/columns.

# **Data Analysis**

Out of 74(22.5%) patients who relapsed within a month and 34(10.3%) patient who relapsed within three months, 25% and 47% were aged between 35 – 41. Majority of both the group worked as Worker and Education level being SSLC. 94% of patients in the former and latter groups lived with their families.

72% of the patients relapsed within a month are married, 76% for the other group. Though the first group has less percentage of married people, Marital status is positive factor for relapse within 1 month.

**Below table shows the correlation of factors with target variable i.e. Period of sober(0-30 days), Period of sober(30-90 days)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Factor** | **Period of Sober**  **(0-30 days)**  **“ r value”** | **Period of Sober**  **(0-30 days)**  **“ p value”** | **Period of Sober**  **(30-90 days)**  **“ r value”** | **Period of Sober**  **(30-90 days)**  **“ 9 value”** |
| **Age** | **0.390** | **0.005** | **-0.100** | **0.05** |
| **Education** | **0.07** | **0.53** | **0.240** | **0.1713** |
| **Annual Income** | **0.11** | **0.34** | **-0.21** | **0.222** |
| **Marital Status** | **0.189** | **0.105** | **-0.01** | **0.9164** |
| **AAO** | **0.285** | **0.01** | **-0.194** | **0.27** |
| **Duration of Excess use of alcohol** | **0.08** | **0.495** | **-0.24** | **0.1593** |
| **Family history of Alcoholism** | **0.02** | **0.86** | **-0.02** | **0.909** |
| **Friends were using** | **-0.129** | **0.272** | **0.006** | **0.9** |
| **To avoid problems or sadness** | **0.003** | **0.97** | **0.197** | **0.2639** |
| **To feel better** | **0.07** | **0.530** | **-0.17** | **0.311** |
| **To try** | **0.113** | **0.337** | **-0.106** | **0.55** |
| **Financial Stress** | **-0.009** | **0.933** | **0.019** | **0.912** |
| **Work related Stress** | **0.1734** | **0.139** | **0.3149** | **0.069** |
| **Depression** | **0.0164** | **0.889** | **-0.124** | **0.48** |
| **Aggressive Outburst** | **0.058** | **0.62080** | **-0.044** | **0.801** |
| **Paranoid ideas** | **0.0726** | **0.6208** | **-0.2180** | **0.287** |
| **RiskLevel** | **-0.181** | **0.1226** | **0.0511** | **0.773** |
| **Insomnia** | **-0.014** | **0.900** | **0.197** | **0.263** |
| **Willingness for**  **Treatment** | **-0.06** | **0.595** | **0.118** | **0.505** |

**Table : 1.0**

The value mentioned in above table help us understand in what magnitude a factor is corelated to Period of sober.

Among those who relapse within one month, 68% consumed nicotine, with 35% reporting consumption in the form of gutka and 18% in form of cigarettes. Similarly, among those who relapse within three months, around 64% consumed nicotine, with 29% consuming gutka, 26% consuming cigarettes.

Duration of alcohol consumption, with those who relapse within one month having a longer duration (around 16 years) compared to those who relapse within three months (around 14 years).

Duration of excessive use of alcohol is a positive factor affecting the relapse within a month whereas units of last drink is positive factor for relapse within three months. The below table gives the value of correlation coefficients for duration of excessive use of alcohol and duration of alcohol.

**Table Showing Corresponding ‘r’ and ‘p’ values for Alcohol Consumption**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| factor | Relapse 1 month  r-value | Relapse  1 month  p-value | Relapse 3 months  r-value | Relapse 3 months  p-value |
| Duration of excess use of alcohol | 0.080 | 0.495 | -0.246 | 0.159 |
| Duration of use of alcohol | 0.196 | 0.093 | 0.035 | 0.8432 |
| Units of last drink | -0.074 | 0.528 | 0.045 | 0.800 |

**Table:1.1**

Patients who relapsed within one month, 32.4% experienced psychiatric complications such as confusion and depression. Similarly, among patients who relapsed within three months, 30.8% faced the same psychiatric problems. 7.7% report hallucinations, while the percentage slightly increases to 10.8% for those who relapse within one month.

The psychiatric factors that have positive correlation with period of sober(0-30 days) are depression(r=0.016), aggressive burst out(r=0.058), paranoid idea(r=0.07), suicidal thoughts(r=0.05).

**Table Showing Corresponding ‘r’ and ‘p’ values for Psychiatric Problems**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Factors | Relapse  1 month  ‘r’ | Relapse 1 month  ‘p’ | Relapse 3 months  ‘r’ | Relapse  3 months ‘p’ |
| Confusion | 0.081 | 0.487 | 0.055 |  |
| Depression | 0.016 | 0.889 | -0.124 | 0.4 |
| Aggressive  Brust out | 0.058 | 0.624 | -0.044 | 0.88 |
| Paranoid idea | 0.072 | 0.538 | -0.187 | 0.287 |
| Suicidal  Thoughts | 0.055 | 0.636 | -0.218 | 0.245 |

**Table: 1.2**

If we dig down deeper for the reason for starting alcohol consumption, we see that the people in our ambience affect our behavior. 48.8% who relapsed within a month started drinking alcohol due to influence of the family or friends, same pattern is observed by patients who relapse within three months.

18% of the former group had an AAO of 20 years, while 17% of the latter group had an AAO of 17 years. AAO is a factor that has positive correlation with relapse within a month (r=0.285).

During the de-addiction process, 25.9% of those who relapsed within a month and 38.5% of those who relapsed within three months experienced tremors and insomnia as their major withdrawal symptoms. 7.7% patients who relapse within three months experience severe withdrawals (Tremors, Insomnia, Sweating, Anxiety, Restlessness) and this percentage increased to 14.8% who relapse within a month.

The withdrawal symptom that correlates has positive correlation with relapse within 3 months is Insomnia(r=0.197).

**Table Showing Corresponding ‘r’ and ‘p’ values for Withdrawal Symptoms**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Factor | Relapse  1 month  r-value | Relapse 1 month  p-value | Relapse 3 months  r-value | Relapse 3 months  p-value |
| TI | -0.044 | 0.705 | -0.01 | 0.939 |
| I | -0.014 | 0.900 | 0.197 | 0.263 |
| T | -0.136 | 0.246 | -0.088 | 0.618 |
| STIAR | 0.094 | 0.4211 | 0.075 | 0.675 |

**Table:1.2**

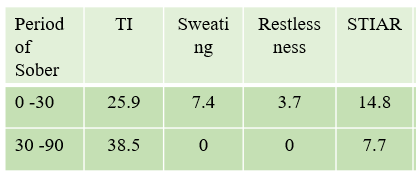
**TI = Tremorse, Insomnia**

**T= Tremors**

**I = Insomnia**

**STIAR = Sweating, Tremors, Insomnia, Anxiety, Restlessness**

**Table showing % of Withdrawal Symptoms**



**Table: 1.3**

The percentage of withdrawals and psychiatric is more in people relapsed within one month because 32% of patients have took treatment for 8 days, this in another group increases to 38%.

# **Conclusion**

Through the analysis made over 329 patient’s data, the positive factor that plays important role in relapse of patient within a month are age, annual income, marital status, weight, family history of alcoholism, duration of excess use of alcohol, AAO for alcohol, psychiatric problem include paranoid idea, suicidal thoughts, depression, aggressive burst out, reason for starting alcohol being to feel better, to try, willingness for treatment.

Positive factor for relapse within three months are insomnia, risk level, average units of last drink, reason for starting alcohol being someone in family or friends were using, work related stress.

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