Evaluation of Raktadushti in Madatyaya Vyadhi: A Cross Sectional Observational Study

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Abstract: All over the world, alcohol consumption is becoming a lifestyle. The fashion of alcohol ingestion leads to habits of chronic alcoholism. Alcoholism (Madyapana) is a behavioral disorder characterized by repetitive and excessive consumption of alcohol (Madya). It is observed that long-term consumption of alcohol damages the liver to a very large extent, leading to either Alcoholic liver disease or liver cirrhosis. In Ayurveda, this condition can be correlated with ‘Madatyaya.’ Madya is described as the main etiological factor of various diseases at multiple places in Ayurvedic classics, but madatyaya is a primary one. Ayurved explains the etiology, pathogenesis, and treatment of madatyaya, but the specific srotodushti is not explained. When characteristics of madya and causative moolasthanavikruti (Hepatotoxicity) are considered, it is assumed that madya may cause raktadushti also. Hence this topic is an attempt to evaluate raktadushti in madatyaya vyadhi. It is a cross-sectional observational study performed on 50 patients of Madatyaya. Patients were examined thoroughly, and all the details were noted in a specially designed case record format. A comparative study of madatyaya and raktadushti was conducted; also assessment of raktadushti was done based on symptoms of raktadushti observed in those patients. Collected data and the observations are then analyzed by statistical tests such as the chi-square test and correlation regression. This study proves the positive correlation between madatyaya and raktadushti. It may be the alcohol metabolized primarily in the liver, which is getting damaged by long-term consumption. Ayurveda explains Yakrita and pleeha as the moolasthana (roots) of Raktavaha srotas. This moolasthanada dushti (damage to the root) causes damage to the whole system (Raktavaha srotas); hence madatyaya vyadhi can be labeled as a disease of Raktavaha srotas.

Key words: Madatyaya, Raktadushti, Alcoholism, Yakrita Dushti, Raktavaha srotas

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1. INTRODUCTION

Alcoholic beverages are similar to food and act as nectar if used judiciously; otherwise, they cause many diseases. Food sustains life if consumed properly; otherwise, it kills the individual. Similarly, poison acts as a rejuvenator if used judiciously. Madayapaan is a behavioral disorder characterized by repetitive and excessive consumption. Intake of alcohol in more concentration causes vitiation of tridosha. The ruksha guna of alcohol vitiates vata dosha causing rise to symptoms like insomnia, delirium (Praloop), and Tremors (Kampa); the pitta dosha causes Vertigo (bhrama), Burning sensation in the palm and soles (daha), Increased thirst (Trishna) and the kapha dosha causes Vomiting (chhardi), Nausea (hrullas), Ageusia (aroachak) etc. There are similarities between these conditions and the symptoms of alcoholism.

The World Health Organization (WHO) has listed alcoholism as one of the three most deadly killer diseases of the 20th century. Madayaya is the disorder which is characterized by pramôha (fainting/ severe confusion), hṛdaya (precordial pain/cardiac pain), viś bhêda [loose motions/diarrhoea], satataṛṣṇā [continuous thirst], saumya āgnêya [saumya āgnêya], jvara [fever], aruci [tastelessness], sīrah ruk [headache], pārśva ruka [pain in flanks], asthi ruk [pain in bones], kampah [tremors], marma bhêda [injury to vital points], trīk graha [stiffness of sacroiliac region], urō vibandha [chest tightness], timira [errors of refraction/partial blindness], kāsah [cough], svāsa [breathlessness/difficult breathing], prajāgarah [being awake], atimatrā svēda [excess sweating], viśṭambhā [constipation/fullness in the abdomen], śvayathu [oedema], citta vibhrama [instability of mind], pralāpa [excess talking/irrelevant speech/incoherent speech], chardih [vomitting], utkleshā [nausea/provocation of dōṣa], bhrama [jīddiness or dizziness], duḥsāpna dārsana [having unpleasant dreams]. Madya is described as primary etiological factor for vitiation of Rakta dhātu. When characteristics of madya, and causative moolasthananvikrutā (Hepatotoxicity) are taken into consideration, it is assumed that madya may cause rakdushit also. In modern texts, alcohol is metabolized almost exclusively by the liver. 80% of alcohol is metabolized to Acetaldehyde by the mitochondrial enzyme ADH (Alcohol Dehydrogenase). Acetaldehyde forms an adduct with cellular proteins in hepatocytes, activating the immune system and leading to cell injury. ADH metabolizes Acetaldehyde to acetyl Co-A and acetate; this generates NADH from NAD (Nicotinamide adenine dinucleotide), which changes the redox potential of the cell. All the studies on madatyaya Vyadhi (Alcoholism/Alcohol Abuse) are either interventional studies reflecting the efficacy of certain Ayurvedic preparation on madatyayaVyadhi some studies on the behavioral aspect of the madatyaya patient. There is no such study carried out which will explain the pathogenesis of madatyaya Vyadhi scientifically. Madatyaya is a Hetu-Pradhana disease, which means there will be no madatyaya unless there is ‘Madya’ as an etiological factor. Hence it is important to elaborate on the progression of pathogenesis in madatyaya Vyadhi. This study attempts to establish a relationship between Rakdushiti and madatyaya Vyadhi, which will help to understand the samprapti (Pathogenesis) of madatyaya Vyadhi. While describing the stages and treatment of madatyaya, ayurvedic classics did not explain the srotasdstushit in madatyaya. This study focuses on the pathogenesis part of madatyaya vyadhi. Thus this study will bridge the gap between the previous researches can open one another way to treat madatyaya focusing on rakdushiti. It will also help in the assessment of risks and complications. The liver, i.e., Yakrit, is one of the moolasthana (Roots) of Rakta vyadhi, and also yakrta is said to be shonita-prabhava (Developed from blood). When alcohol is metabolized in the liver, it causes cell injury, as described above. Hence liver cells get damaged, leading to Rakta vyadhi, which further causes vitiation of Rakta vyadhi, i.e., Hepatotoxicity, which may cause rakdushiti also; hence this project is an attempt to study the correlation between madatyaya and rakdushiti. It can be helpful to all Ayurveda students and practitioners if this study proves the positive correlation between the same.

2. MATERIALS AND METHODS

It is an observational study performed on the patients of madatyaya vyadhi. A specially designed case record format records the history and other observations. Liver function tests were done in a central laboratory with the help of various reagents of Bilirubin Total and Direct, SGOT, SGPT, and Alk. Phosphatase, Protein Total, and albumin

2.1 Determination of sample size:

\[ P = 48\% \]

Sample size = \[ Z^2 \times (p \times (1-p)) / e^2 \]

\[ P = \text{Prevalence of alcoholism} \]
\[ Z = \text{Constant} = 1.96 \]
\[ e = \text{margin of error} \]

Sample Size = \[ Z^2 \times (p \times (1-p)) / e^2 \]

\[ = (1.96)^2 \times (0.5 \times (1-0.5)) / (0.15)^2 \]
\[ = 3.8416 \times 0.5 / 0.0225 \]
\[ = 42.6 \sim 43 \]

A standard dropout of 15% is considered. Therefore, the sample size will be 50. Therefore 50 patients are enrolled in the study.
2.2. **Inclusion Criteria**

- Patients who consume 60ml alcohol/day at least 5 days/week for at least the last 5 years.
- Patients are having signs and symptoms of *madatyaya*.
- Age between 18 years to 60 years.
- Irrespective of gender.

2.3. **Exclusion Criteria**

- Patients suffering from any major illness like AIDS, Koch’s disease, or malignancy, these cases were excluded from the study.
- Patients have blood cell disease or any Blood coagulopathy.
- Patients with altered sensorium.
- Pregnant and lactating mother.
- Occasional alcohol drinker.

2.4. **Ethical Statement**

Ethical clearance was obtained from the Institutional Ethics Committee of the research center vide letter no. RSJH/PG/IEC/687/2014 Dated 04/12/2014. All the participants clearly explained the purpose of the study, and written informed consent was obtained from all of them before conducting the study. Furthermore, assurance of maintaining confidentiality was given to all the participants.

2.5. **Plan of Work**

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Selection of Patients based on inclusion criteria

Prior informed consent from every patient was taken.

The detailed case history of the patient was noted with the help of the case record format.

These patients of *Madatyaya* were selected for the study.

Etiological factors and Symptoms of *Raktadushti* were noted down.

A blood sample was collected and sent to a laboratory for LFTs

All data were collected together and analyzed with statistical tests.

Graphical presentation of data analyzed.

Results are drawn from the data analyzed.

Conclusions are made based on the results obtained from the study.
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3. **RESULTS**

While conducting this study, we came across various angles of this study. For results, the Distribution of patients was done based on various parameters; we calculated the mean, standard deviation, and percentage of 50 patients who participated in the study by tables and graphs. The observations are interpreted as follows.
Table 1: Age-wise Distribution

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 – 30</td>
<td>4</td>
<td>8%</td>
</tr>
<tr>
<td>31 – 40</td>
<td>23</td>
<td>46%</td>
</tr>
<tr>
<td>41 – 50</td>
<td>11</td>
<td>22%</td>
</tr>
<tr>
<td>51 – 60</td>
<td>12</td>
<td>24%</td>
</tr>
</tbody>
</table>

Table 01: This table shows the incidence of *madatyaya* in the different age groups of the participants. A high incidence of *madatyaya* is found in the age group of 31 years to 40 years. At the same time, it is lowest (i.e., 8%) in the age group of 18 to 30 years.

Table 2: Occupation-wise Distribution

<table>
<thead>
<tr>
<th>Occupation</th>
<th>No. Of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy workers</td>
<td>15</td>
<td>30%</td>
</tr>
<tr>
<td>Workers</td>
<td>29</td>
<td>58%</td>
</tr>
<tr>
<td>service</td>
<td>5</td>
<td>10%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1</td>
<td>2%</td>
</tr>
</tbody>
</table>

Table 02: This is the occupation-wise Distribution of all the participants. 58% is the highest percentage of *madatyaya* among the workers doing moderate physical work. And the lowest percentage was found in the unemployed subject because only 1 unemployed subject was enrolled. *Srotadushti* was assessed by all the symptoms of *srotadushti* with the help of a specially designed case record format.

Table 3: Distribution according to Srotadushti

<table>
<thead>
<tr>
<th>Srotas</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pranvaha</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>Udakvaha</td>
<td>15</td>
<td>30%</td>
</tr>
<tr>
<td>Annavaha</td>
<td>41</td>
<td>82%</td>
</tr>
<tr>
<td>Rasvaha</td>
<td>50</td>
<td>100%</td>
</tr>
<tr>
<td>Raktavaha</td>
<td>50</td>
<td>100%</td>
</tr>
<tr>
<td>Mansavaha</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Medovaha</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Asthivaha</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Majjavaha</td>
<td>4</td>
<td>8%</td>
</tr>
<tr>
<td>Shukravaha</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Mutravaha</td>
<td>2</td>
<td>4%</td>
</tr>
<tr>
<td>Purishavaha</td>
<td>4</td>
<td>8%</td>
</tr>
<tr>
<td>swedavaha</td>
<td>3</td>
<td>6%</td>
</tr>
</tbody>
</table>

Table 03 depicts the body's overall status (Channels). Almost all patients showed the vitiation of *Rasa* and *Raktavaha* srotasa. They were followed by *annavaha srotadushti* in 82% of patients. Vitiation of *mamsa*, *meda*, and *asthivaha srotasa* was not observed in any of the participants. All other srotas were found to be vitiated in a very less number of patients.
Figure 1: Distribution according to Symptoms of Madatyaya

Fig 01: This is the graphical presentation of the distribution of all the participants according to the symptoms of madatyaya. Symptoms of madatyaya, observed at least in 1 single patient, are plotted here. The symptoms like *sam moha*, *Kampa*, *Aruchi*, *hrilhas*, etc., are observed in most patients, while *uro-vibandha*, *sphurana*, etc., are the least observed.
Fig 2: This is the graphical representation of symptoms of raktadushti observed in the study participants. Dourbalya, mada, krodhaprachurata, akshiraga, mlana-parusha twaka, etc., symptoms are observed in more than 80% of participants. At the same time, visarpa, lavanasyata, peedaka, etc., are the symptoms of raktadushti, which are least observed in participants.
Fig 3: Total No. Of Symptoms of Madatyaya

Graph 03: This graph shows the number of symptoms of madatyaya present in each patient. Some of the patients showed more than 80% symptoms of madatyaya. Most patients with a history of long-term alcohol consumption have shown a maximum number of symptoms. In contrast, the recent history of alcohol consumption (i.e., at least 5 years) — has shown fewer symptoms.
Fig 4: Distribution according to total symptoms of raktdushti

Fig 4: This graph shows the number of symptoms of Rakta-Dushti in each patient. More than 60% symptoms are present in most of the patients. All the other possible confounders of Rakta-dushti were excluded during this study. These are the symptoms of raktdushti because of only alcohol consumption.

Table 4: LFTs Bilirubin Levels

<table>
<thead>
<tr>
<th></th>
<th>Total Patients</th>
<th>Percentage</th>
<th>Direct Bilirubin</th>
<th>Total Patients</th>
<th>Percentage</th>
<th>Indirect Bilirubin</th>
<th>Total Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>11</td>
<td>22%</td>
<td>09</td>
<td>18%</td>
<td>09</td>
<td>18%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deranged</td>
<td>39</td>
<td>78%</td>
<td>41</td>
<td>82%</td>
<td>41</td>
<td>82%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 05: Liver enzymes Levels

<table>
<thead>
<tr>
<th></th>
<th>SGOT Total Patients</th>
<th>Percentage</th>
<th>SGPT Total Patients</th>
<th>Percentage</th>
<th>ALK.PHOSPHATASE Total Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>10</td>
<td>20%</td>
<td>13</td>
<td>26%</td>
<td>18</td>
<td>36%</td>
</tr>
<tr>
<td>Deranged</td>
<td>40</td>
<td>80%</td>
<td>27</td>
<td>74%</td>
<td>32</td>
<td>64%</td>
</tr>
</tbody>
</table>
Table 5: SGOT, SGPT, and alkaline phosphatase are the specific enzymes secreted by liver cells or intra-hepatic biliary canaliculi. Once the function of hepatocytes is disturbed, an obvious disturbance in the secretion and metabolism of liver enzymes is seen. 80% of participants showed deranged SGOT, 74% showed deranged SGPT, and 64% showed deranged alkaline phosphatase.

Table 6: Protein metabolism is the late function of the liver; hence it does not hamper in early stages of liver damage. Here 66% of patients showed hyperproteinemia. It is a result of chronic liver cell damage.

4. **STATISTICAL ANALYSIS**

The Data obtained was analyzed using Medcalc statistical software version 9.2.0.2. The chi-square test and test for Correlation-Regression were used for the analysis.

Table 7: Chi-square table

<table>
<thead>
<tr>
<th>Symptoms of Madatyaya</th>
<th>Total</th>
<th>Mild</th>
<th>Moderate</th>
<th>Marked</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Patients</td>
<td>50</td>
<td>0</td>
<td>37</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>Normal</td>
<td>17</td>
<td>0</td>
<td>17</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>Deranged</td>
<td>00</td>
<td>0</td>
<td>00</td>
<td>0</td>
<td>00</td>
</tr>
<tr>
<td>Decreased</td>
<td>33</td>
<td>66%</td>
<td>33</td>
<td>66%</td>
<td>12</td>
</tr>
</tbody>
</table>

The Chi-square (X^2) value of the above table is = 14.031.

Degrees of freedom (df) = 4

Chi-square(X^2) tabulated value of df = 4 is 13.28 at P <0.01 i.e., at a 99 % level of significance.

Where, Mild = 0% to 25% of symptoms
Moderate = 26% to 50% of symptoms
Marked = 51% to 75% of symptoms
Severe = more than 75% of symptoms

Table 8: Test for Correlation

<table>
<thead>
<tr>
<th>Symptoms of Madatyaya</th>
<th>Symptoms of Raktadushti</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
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<tr>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td>15</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 08: This table shows the correlation between symptoms of madatyaya and symptoms of Raktadushti. As the number of symptoms of madatyaya increases, the range of symptoms of Raktadushti increases.

Sample size | 50
Correlation coefficient r | 0.3881
Significance level | P=0.0052
95% Confidence interval for r | 0.1241 to 0.5022
"Correlation coefficient, i.e., "r," calculated from the above table, is 0.3891. As the correlation coefficient (r) lies between 0 and +1, it can be predicted that there is a "Moderately Positive Correlation" between the Symptoms of Madatyaya and the Symptoms of Rakta dushti. (* Data is analyzed based on Medcalc statistical software version 9.2.0.2)

Fig 5: Graph Showing Co-relation between Symptoms of Madatyaya and Symptoms of Rakta dushti

Fig 5: This is the graph plotted against table no 08. This graph shows the Correlation between the Symptoms of Madatyaya and the Symptoms of Rakta dushti. See the graphical representation as the no. of symptoms of madatyaya increases, the no. of Rakta dushti symptoms also increases.

5. DISCUSSION

In the present study, 50 patients of Madatyaya were enrolled for the study. The disease was diagnosed based on signs and symptoms described in the Ayurvedic text. Then, clinical examinations and Liver Function tests were done to observe the relationship between Madatyaya and rakta dushti.

5.1. According to age

24% of patients were between the ages of 51-60 years, 22% between 41-50 years, 46% between 31-40 yrs, and 4% were between 18-30 years of age. Therefore, present study shows that the incidence of Madatyaya is seen in almost all age groups, but mostly 31-40 years of age group is affected more. (Table No 01)

5.2. According to gender

100% of patients in this study were male, and 0% were female. A high incidence of madatyaya is seen in the male gender. It is hard to find a female patient with alcohol addiction in this study setting. No such patient could be found; hence, the study is done on male patients only.12

5.3. According to occupation

Out of 50 patients, 58% patients were workers, including sweepers, security guards, bidi Kamagra, etc., 30% of patients were heavy workers, which include collie, cycle rickshaw drivers, laborers, etc., next 10% of patients were service which include clerk, office employee, etc. and 2% were unemployed. (Table No. 02). The above observation shows that madatyaya vydhi is commonly found in workers and heavy workers in the present study. The cause behind this may be physical and mental stress leading to alcohol addiction.13

5.4. According to srototadushi

In this study, all the patients of madatyaya were found to have Rasvaha and Rakta vaha srototadushi; the rest of the srotas were found proportionately normal. (Table No. 03). It may be because madya gets absorbed from amashay itself (the root of annahahasrotas) and reaches hriday, the center of Rasa's circulation and Rakta. Also, Alcohol causes liver injury when metabolized; the Liver is the root of rakta vaha srotas. Hence it has become a primary cause for rakta vaha srotadushi.14

5.5. According to etiological factors of madatyaya

The root cause of madatyaya is Madyapaan. The various factors in sushrutsamhita are according to the conditions when madya, i.e., alcohol, is consumed. This condition, when studied, is mainly pitta-vata prakopak, and madya is also pitta prakopak. Hence these conditions promote madya to progress the samprapti of madatyaya.15

5.6. According to Symptoms of Madatyaya

In madatyaya, vyadh sam moha was found in 96%, following sharir kampa (Tremors) was found in 94%. Sharir dukha, Aruchi and Hrulhas, each found in 92 % patients. Shrama and trushna were found in 72% & 74%, respectively. Jwara, Chhardi, Asthi- Sandhi school, and mukhras was found in 68%,60%, 58%, and 58%, respectively. Rests of the symptoms are found in less than 50% of patients. (Graph 01). Shitoshna lakshan, vepan, Atisar, Kamaro, osatam darshan, Pragharmsham vihaigaishcha, and Truna-panshubhishchavapuram these symptoms were not found in any patient in the present study.

5.7. According to Rakta dushti Hetu

All the patients were having Pradushta, Teekshhana and Bulk amount of madyapaan sataya. 10% of total patients were having Atikatu aahar sevan and 54% patients were having atap sevan.

5.8. According to symptoms of Rakta dushti

In the present study, it was observed that Mada and atidourbalya these two symptoms were observed in most of the patients, i.e., 90%. Kroha pracurata was seen in 88%, Akshiraga, Mlan tvak, and Parush tvak these symptoms were found in 86% of patients, Rukshata and sphuita tvak found in 82%, Asya gandhita and Kampa found in 80% patients, Buddh sam moha found in 78% patients, swar kshay and klama found...
in 74% and 72% patients respectively. Mukhopad in 68% and santap in 64% patients. Pipasa and poothighra were found in 60% of patients. Tandratyoga was seen in 54% of patients. Rest of the symptoms are observed in less than 50% of patients. (Graph No. 02) Madya Causes Pittapradhan tridosh dushthi, and pitta has an ashray-ashrayee correlation with rakta. Therefore vitiated pitta vitiates rakta leading to raktadushti. Therefore, most of the symptoms of raktadushti observed in the present study are those of pittaj raktadushti. These symptoms were not found in any patient in the present study.

5.9. According to the total number of symptoms of Madatyaya

In this study, a minimum of 7 symptoms of madatyaya were observed in 8% of patients, and 2% of total patients had a maximum of 17 symptoms of madatyaya. Rest 80% of patients showed madatyaya symptoms in between. (Graph No. 03)

5.10. According to the total number of symptoms of raktadushti

In the present study, a minimum of 12 (i.e., 24.486%) symptoms of raktadushti were observed in 2% of patients, and a maximum of 26 (i.e., 53.061%) symptoms of raktadushti were observed in 2% patients. Of the rest, 96% of patients had symptoms of raktadushti in between. (Graph No. 04)

5.11. According to LFTs

LFTs of selected 50 patients revealed deranged values of most liver enzymes, which include – Total Bilirubin deranged in 78%, Direct & indirect Bilirubin deranged in 82% each, SGOT deranged in 80%, SGPT deranged in 74% of patients while Alkaline Phosphatase levels deranged in 64% patients. Regarding protein levels, it is seen that Total Protein and albumin values decreased by 66% each, and Globulin levels decreased by 90% and were deranged in 4% of patients. (Table No. 04, 05, 06). The cause behind this may be the metabolism of alcohol takes place in the liver. Alcohol damages liver cells resulting in deranged LFTs.

6. CONCLUSION

Higher prevalence of Madatyaya is observed in the age group of 31 years to 40 years. Patients who are workers or heavy workers are found more prone to madatyaya. As the calculated chi-square (X^2) value is higher than the tabulated chi square value, the null hypothesis is rejected, and the alternative hypothesis is accepted. As the correlation coefficient (r) lies between 0 and +1, it can be predicted that there is a "Moderately Positive Correlation" between the Symptoms of Madatyaya and the Symptoms of Raktadushti. Hence There is Raktadushti in Madatyaya Vyadhi. LFTs are found elevated in madatyaya vyadhi. Hence consumption of alcohol should be done very judiciously. Patients of madatyaya should reduce the amount and frequency of alcohol consumption and avoid the other factors which cause raktadushti.

7. AUTHORS CONTRIBUTION STATEMENT

Sumant Pande, Maheshwari Joshi, And Seema Thakare conceived, planned, and conducted the experiments. Sumant Pande and Maheshwari Joshi contributed to the draft preparation, and Sumant Pande and seema thakare contributed to interpreting the results. All authors provided critical feedback and helped shape the research, analysis, and manuscript.

8. CONFLICT OF INTEREST

Conflict of interest declared none.

9. REFERENCES