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## An Observational Study to Assess the Etiological Factors in Pathogenesis of *Pittoulbana Sannipataja Jwara* w.s.r Typhoid Fever

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### ABSTRACT

In India, typhoid fever is still an endemic disease. Humans are the only natural source for *Salmonella typhi* and is transmitted through contaminated water and food. *Jwara* is the most powerful ailment because it affects the whole body, senses, and the mind due to *Vikriti* of *Rasavahasrotas* and *Manavahasrotas*.

The main objective of the study is to evaluate and analyse the etiological factors of *Pittoulbana Sannipataj Jwara*, for this purpose an observational study was done on 50 patients of *Pittoulbana Sannipataj Jwara*, based on demographic data, *Aharaja*, *Viharaja*, *Mansika nidana*. *Nidana Parivarjana* is the best treatment for any disease. After analyzing the etiological factors, *Pathya* and *Apathya* described in *Ayurveda* along with *Nidana Parivarjana* can be prescribed for the prevention and management of diseases.

### KEYWORDS

*Pittoulbana Sannipataj Jwara*, Typhoid fever, etiological factors, *Agnimandya*



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## INTRODUCTION

*Pittoulbana Sannipataja Jwara Roga* is caused due to improper formation of *Rasa*, i.e. *Ama*, *Aharaja*, *Viharaja*, and *Mansika nidana* causes hypo-functioning of *Jatharagni* that causes improper production of *Anna Rasa*. *Anna-rasa* leads to the formation of *Ama* and will consequently obstruct the *Swedvaha* and *Rasvaha Srotasa* due to *Khaivaigunya*. Also, the *kosthagni* will displace from its *swasthnana* and produces *Jwara Roga*. According to *Acharya Charaka*, *Jwara* is caused due to vitiation of *Rasavaha srotas*<sup>1</sup>. All the *Acharyas* have described *Jwara* as the most important among all the diseases. It produces tiredness, exhaustion, confusion, and difficulty in the intake of food. It is called as *Jwara* because it brings about unhappiness in the person, no other disease is so severe, complicated, and difficult in management as *Jwara*<sup>2</sup>. The study of *Sannipata jwara* is necessary as pathogenesis of *Sannipata* is more advanced and irreversible.

Typhoid fever is an infection caused by *Salmonella enterica* serotype *typhi* and *Para typhi*<sup>3</sup>. It is a prolonged febrile illness and continues to be a health problem in developing countries where there is poor sanitation, poor standard of personal hygiene, and prevalence of contaminated

food. In endemic areas, the risk factors for causation of disease, such as a junk food, ice-cream or drinks from street vendors, drinking contaminated water, poor housing with lack of personal hygiene facilities, and lack of knowledge about complications of the disease. According to the WHO, global typhoid fever burden at 11-21 million cases annually, resulting in about 12800 - 161000 per year<sup>4</sup>. Because of its severity, *Pittoulbana Sannipataj Jwara* has been considered for the present study. The study of *Sannipataj Jwara* is necessary as many *Acharyas* have mentioned *Asadhya*. Keeping the gravity of the situation, the present study has been undertaken to clinically explore the etiopathogenesis of *Pittoulbana Sannipataja Jwara*.

In Ayurveda, the causes of *Jwara roga* have been described in detail, e.g. indulgence of food containing more *Amla*, *Ksara*, *Lavana*, *Ushna*, *Ruksa* a causes vitiation of *Vata & Pitta* and *Agnimandya*. *Vismasana* and *Ajirna Bhojana* cause *Agnimandya* and production of *Ama*<sup>5</sup> or anti-substance and leads to disturbance of the gastric mucosa first then, mixed with immature *Rasa Dhatu* and then, circulate all over the body. Intake of *Dravya* like *Snigdha*, *Guru*, *Madhura*, *Picila*, *Shita* etc., frequently causes *Mandagni* and *Tridosha prakopa*.

*Acharya Sushruta*, has mentioned that *Krodha*, *Shoka*, *Bhaya*, *Vidagadha Anna*



*Sevan, Atimaithuna* leads to vitiation of *Pitta Dosh*<sup>6</sup>. *Diwasvapna, Avyayama* lead to *Ama* formation and further *Agnidushti*. *Cinta, Bhaya, Krodha, Shoka* etc. *Manasika Nidana* also leads to *Vata Prakopa* and this vitiation of *Vata* causes *Agnidushti* and improper *Rasa Dhatu* formation<sup>7</sup>. *Ativyayama, Ratrijagarana, Nidranasha, Ativyayama and Atiadhvagamana* can cause vitiation to *Vata Dosh*<sup>8</sup>. *Acharya Charaka* has emphasized the bad effects of *Cinta, Bhaya*, etc. on the digestive process. Means, wholesome foods taken even in the proper quantity don't get properly digested when the individual is afflicted with grief, fear, anger, sorrow, and inconvenient bed for sleep. *Cinta, Bhaya* etc. causes improper digestion of food which leads to improper *Rasa Dhatu* formation and further hampers the *Agni* of *Rakta Dhatu, Mamsa Dhatu* and so on and thus, leads to *Jwara Roga*.

## AIMS AND OBJECTIVES

1. To assess the etiopathogenesis of *Pittoulbana Sannipataja Jwara Roga*.

## MATERIALS AND METHODS

### PLAN OF STUDY

#### a) Selection of patients-

1) Total of 50 patients of *Pittoulbana Sannipataj Jwara* were selected from OPD/IPD of Rog Nidana department,

Rishikul Campus, Uttarakhand Ayurveda University, Haridwar.

2) All the cases registered for the study were then evaluated clinically and investigated thoroughly. *Dashvidha Pariksha* of the patients was done.

a) **Type of study-** Clinical Observational study.

#### b) INCLUSION CRITERIA-

- Patient having chief complaints of ***Pittoulbana Sannipataj jwara***.
- Typhi dot should be positive.
- Widal titre should be 1:80 or more than 1:80.
- Patients between the age group of 16 to 70 years were included for the present study.

#### c) EXCLUSION CRITERIA-

- Negative typhi dot and Widal titre less than 1:80.
- Patients having *Vishama Jwara* like Malaria, Dengue, Chikungunya etc. and other type of fevers
- Known case of chronic heart diseases, kidney diseases, HTN, DM, severe infections will be excluded for present study.

#### d) INVESTIGATIONS –

- 1) Serological tests like Widal test detect antibodies against *Salmonella typhi*.
- 2) Typhi Dot test is based on the presence of specific IgM antibodies.



3) Other routine hematological tests like Hb%, TLC, DLC, ESR.

4) Urine examination (R/M) (if required) – For detection of other causes of fever like UTI.

## DISCUSSION

**AGE** - It was found that the maximum number of patients, i.e. 54% belonged to the age group of 16-30 years, followed by 32% of patients to 31–45 years, 14% patients belonged to 46-60 years of age group (Table 1). The probable cause for increased prevalence in this age group might be that, younger age groups are more prone to drinking contaminated water and food because of their eating habits in public places. Second, they are not so financially

stable and can't afford healthy food, as street food is cheaper and easily available outside the colleges, and schools.

**SEX** - In the present study it was found that out of total cases of sex incidence, males reported 54% and that of females was 46% (Table 1). It could be due to maximize registered patients were males. Thus, this disease has no relation to gender.

## RELIGION

Religion wise maximum patients, i.e. 82% belonged to the Hindu religion (Table 1). Although the population of the Hindu community is higher in this geographical territory, it is obvious that Hindu patients were found more in number. Thus, it is found that this disease has no relation to religion.

**Table 1** Epidemiological data

<b>SEX</b>	<b>No. of patients</b>	<b>Percentage (%)</b>
Female	23	46%
Male	27	54%
<b>AGE (years)</b>	<b>No. of patients</b>	<b>Percentage (%)</b>
16 – 30	27	54%
31 – 45	16	32%
46 – 60	07	14%
<b>RELIGION</b>	<b>No. of patients</b>	<b>Percentage (%)</b>
Hindu	41	82%
Muslim	09	18%
<b>MARITAL STATUS</b>	<b>No. of patients</b>	<b>Percentage (%)</b>
Married	22	44%
Unmarried	28	56%
<b>OCCUPATION</b>	<b>No. of patients</b>	<b>Percentage (%)</b>
Service	11	22%
Labour	7	14%
Housewives	10	20%
Business	3	6%
Students	19	38%
Travelers	12	24%
<b>HABITAT</b>	<b>No. of patients</b>	<b>Percentage (%)</b>
Urban	30	60%
Rural	20	40%



<b>SOCIOECONOMIC</b>	<b>No. of patients</b>	<b>Percentage (%)</b>
Lower	26	52%
Middle	18	36%
Upper	2	4%
Very poor	4	8%
<b>EDUCATION</b>	<b>No. of patients</b>	<b>Percentage (%)</b>
Undereducated	15	30%
Illiterate	10	20%
Post graduated	5	10%
Graduated	13	26%
SSC	3	6%
HSC	4	8%

**EDUCATION** - In the present study, it was found that the prevalence of Typhoid fever increases steadily with lower educational level and poor-living standards (Table 1) which denotes that they may be less careful about the causes and complications of the disease, and its mode of transmission. It was found that maximum patients were illiterate or lower educational status due to ignorance, poverty, and poor personal hygiene.

**OCCUPATION** - It was found that maximum, i.e. 38% were the students and 24% were travellers (Table 1) as youngsters are fonder of eating street food, drinking non-filtered water, lacking personal hygiene like not washing hands before taking meal. Students are more prone because they have a hectic atmosphere of competition which leads to unhealthy lifestyle behaviors. The root cause of *Jwara* is *Mithyaahara Vihara* which is mostly done by youngsters.

*Aupsargika karana* was observed in travellers. It can be explained here as

Typhoid fever is spread through the faeco-oral route by ingesting contaminated water or food and travellers must eat packed food and water during traveling, and they are usually unhygienic or eating with carrier person during traveling.

**SOCIO-ECONOMIC STATUS** - Analysing the socio-economic status, the incidence was higher in the lower socioeconomic group, i.e. 52% (Table 1). The possible reason might be their living standard and poor personal hygienic conditions.

They live in slum areas or low-elevated areas which cause stagnant of water during raining and this water contaminates other sources of drinking water available there. Second, most of the solid wastes are disposed of on the land and open-defecation which can be responsible for the transmission of disease from carriers.

**DIET PATTERN** - Maximum patients, i.e. 60%, were having irregular dietary habits while 40% were having regular dietary habits (Table 2). *Vismasana* causes



*Agnimandya* and *Doshaprakopa* ultimately, *Dhatvagnimandya* and causes *Dhatu dushti* which is the root cause of disease. Irregular

dietary habits increase a person's hunger which usually causes a person to eat more unhealthy food.

**Table 2** Vaiyakikta itivritta (Personal history) wise distribution

DIET PATTERN	No. of patients	Percentage (%)
Vegetarian	30	60%
Mix	20	40%
APPETITE	No. of patients	Percentage (%)
Poor	28	56%
Moderate	17	34%
Good	5	10%
DIETARY HABIT	No. of patients	Percentage (%)
Regular	19	38%
Irregular	31	62%
AGNI	No. of patients	Percentage (%)
<i>Sama</i>	4	8%
<i>Vishama</i>	15	30%
<i>Manda</i>	31	62%
KOSTHA	No. of patients	Percentage (%)
<i>Mridu</i>	28	56%
<i>Madhya</i>	7	14%
<i>Krura</i>	15	30%

**APPETITE** - Maximum patients, i.e. 56% had a poor appetite, 34% had moderate appetite while 10% had a good appetite (Table 3). If *Mithyaahara vihara* is adopted by the person for a long time then the vitiated *Doshas* get localized in *Amashaya*, and causes *Agnimandya*. Ultimately, there is a formation of *Ama Rasa*. *Nidana* includes which causes *Mandagni* are *Vishamasana*, *Ajirna bhojana*, etc.

**DOMINANT RASA** - Maximum patients, i.e. 80% were taking *Amla Rasa* as their dominant *Rasa*. 80% and 60% of patients were taking *Lavana* and *Katu Rasa* respectively as their dominant *Rasa* daily (Table 2). According to our classics, excessive use of *Amla* and *Lavana Rasa* cause *Pitta prakopa*<sup>9</sup>. *Katu*, *Lavana* and

*Amla Rasa* have been described as *Nidana* of *Jwara*, as they directly vitiate *Pitta* and *Rasa*, then cause *Rasapradoshaja vikaras* like *Jwara*.

Excessive intake of *Ushna*, *Amla*, *Lavana*, *Katu rasa* cause vitiation of *pitta Dosh*. Vitiated *pitta* has more *drava guna* which is opposite to that of *Agni* and causes *Agnimandya*<sup>10</sup>. Same as street foods that are flavoured with chemicals cause serious injury and damage to the intestinal mucosa and result in improper absorption of food.

#### ***Vishamasana***

Maximum patients, i.e. 62% were found to have *Vishamasana* (Table 3). *Vishamasana* aggravates all three *Doshas* and it is also an important cause of vitiating the *Agni*<sup>11</sup>. *Acharyas Vagabhata* has explained



*Vishamasana* means taking diet before or after the actual time of meals<sup>12</sup>.

**Table 3** *Visamasana* Wise Distribution

VISAMASANA	No. of patients	Percentage (%)
Present	31	62%
Absent	19	38%

Both can lead to *Agnidushti* and affect the quality and quantity of *Rasa Dhatu* which furthermore leads to *Rasavaha Srotodushti* and leads to the production of *Ama Rasa*.

**Table 4** *Ajirna Bhojane* Wise Distribution

AJIRNA BHOJANE	No. of patients	Percentage (%)
Present	32	64%
Absent	18	36%

### ***Ajirna Bhojanam***

*Ajirna Bhojne* was present in 64% of the patients (Table 4). Since, in this study majority of patients were students, it was quite clear that they had a habit of eating frequently without waiting for the digestion of food. This causes vitiation of *Tridosha* especially *Kapha* and *Agni* (*Agnimandya*) which fails to complete the digestion of food and causes *Ajirna*<sup>13</sup>. *Ajirna* furthermore leads to production of *Ama*. According to *Acharya Charaka* even wholesome food taken in proper quantity, does not get digested due to *Cinta*, *Shoka*, *Bhaya*, *Krodha* and *Ratri Jagarana*<sup>13</sup>. In this study also *Nidanas* like, *Cinta*, *Shoka*, *Krodha* and *Ratri Jagarana* has been found.

### **Seasonal variation (*Rituparivartana*)**

Maximum patients, i.e. 40% were found in monsoon, 32% of patients were in summer

and 28% of patients were in autumn season (Table 6). The possible reason might be that monsoon provides a favourable environment for the growth of bacteria. It increases the transmission of disease by the mixing of drinking water sources with open sewers that contain faecal matter.

**Table 5** *Satmya Parivartana* Wise Distribution

SATMYA PARIVARTANA	No. of patients	Percentage (%)
Present	24	48%
Absent	26	54%

**Table 6** Seasonal Variations (*Rituparivartana*) Distribution

Climate	No. of patients	Percentage (%)
<i>Varsha</i> (Rainy)	20	40%
<i>Grisma</i> (Summers)	16	32%
<i>Sharada</i> (Autumn)	14	28%

**Table 7** Environmental Factors Wise Distribution

Poor Sanitation	No. of patients	Percentage (%)
Present	31	62%
Absent	19	38%

### **Environmental factors (Poor sanitation)**

Maximum patients, i.e. 62% were living in unhygienic conditions (Table 7). It is quite clear that Typhoid fever is spread through either faecal contamination of food and water or carriers excreting *Salmonella*.

## **CONCLUSION**

*Mithyaahara* can be *Akalabhojan*, *Ajir nabhojan*, *Vishmasana*, *Asatmyabhojan* which was demonstrated in the study. *Apathya* food can be street food, fast food as all these are made up in unhygienic



conditions and can responsible for the transmission of the disease. *Mithya Vihara* like bathing in contaminated water, swimming, etc. can cause ingestion of bacteria. All these factors cause *Agnimandya* and the formation of *Ama* and *Ama* is the main cause of *Jwara Rog*. In the present study, it was found that *Nidanas* described in *Ayurveda* for *Pittoulbana Sannipataja Jwara* are very much related to the present era.

*Nidana Parivarjana* was instructed to the patients of *Pittoulbana Sannipataj Jwara*, as *Nidana Parivarjana* is the first step of treatment which is described by *Acharya Sushruta* in *Uttra Tantra*. The route of transmission of typhoid fever is faeco-oral. So, *Nidana Parivarjana* can be a ray of hope in its eradication.



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