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A CLINICAL STUDY OF ARJUN ON HRIDA-ROGA (ANGINA PECTORIS)

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ABSTRACT

Ayurveda, the science of life, was developed on the fundamental concepts of nature and its various components which are present on the earth in the form of living (plants, animals) and non living (minerals) substances. In ancient period, Indian scholors observed that the diseased state of life is a hindrance to saving the soul, which is an ultimate aim of the life. The drug *Arjuna* is of natural origin and in use since ancient times i.e. 1000 BC. Various research scholars as well as medical researchers found its activities as anti-ischemic, hypotensive, anti-anginal, improvement in TMT performance, improvement in sign and symptoms of heart failure, anti platelet aggregating, hypocholesteraemic and arjuna as hridya (Cardiac) drug.

KEYWORDS: Arjun, Chest pain, Angina, Hridrog, Hriday.

INTRODUCTION

Arjuna tree is clear-cut mentioned in Srimada Bhagvadapurana 10th Skanda. While mentioning in *Krishna bal lila*, there is a situation, where Lord Krishna is tied to a mortar (*okhali*) by his mother Yashoda, after being tied Lord Krishna drags the mortar (*okhali*), along with him and is strucked between two A*rjuna* tree standing in his courtyard. It was so strong that he forcefully pulled the mortar (*okhali*) to the other side, such that, both the *arjuna* trees get uprooted and fall. In this way *arjuna* is mentioned in the form of tree here.

In Brahmana Grantha and Upanisada the term *hridaya* is defined, which is much interesting. This definition serves the purpose of physiological function of *hridaya.* The word *hridaya* is composed of three syllables, i.e. hri+da+ya=*hridaya*. The etymological derivation of the word

hridaya is "*harati dadati iti hridayam*". The first syllable point out the suction activity of *hridaya* (*hridayaam* i.e. venous return), second denote the pumping activity of *hridaya* (samvardhanama i.e. supply of oxygenated blood) and lastly the third syllable means control of these above two functions (*yama*). The *hridaya* is indispensable for all the normal mental and physical activities because the entire sense, perception representing the life or movement of the body depend on the *hridaya*. Moreover, the *hridaya* is the substratum of *rasa*, *vyana vayu*, *buddhi*, *indriya*, *Atma* and *para oja*. The etiology of *hridaya roga* is as follows- *ativyayama* (physical exertion), *atisara (*purgation*)*, *chardi* (vomiting), *Ama* and *Aghata* (injury) are the etiological factors. The other factors which cause *hridroga* are *murcha* (fainting), *jvara* (fever), *kasa* (cough), *svasa (*dyspnoea), *cinta* (anxiety), *bhaya* (fear), *trishna* (thirst), *atiutsaha* (excitement), *bhrama* (mental confusion), and *aruchi* (anorexia). According to Sushruta, suppression of natural urges, intake of excessive warm and dry meals intake of in-compatible food. Intake of food before digestion of previous taken food, indigestion, and non-homologation are causative factors (S.S.UT.-43/3-4).[2] According to Vagbhata, the aetiology of *hridaya* roga is as follows: *jvara*, *chardi*, *atisara*, *karshita*, intake of *vataja Aharavihara*, *langhana* and *vidahahara*. (A.H.Ni-5/40).[3]

LAKSHANA (CLINICAL FEATURES) OF HRIDROGA

General symptomatology of *hridaya roga* has been described only by Charaka in 26th chapter of *cikitsa sthana*. According to historians this chapter was added by Dridhabala later on as it was not originally written by Caraka himself.[1]

Table No. 1. Showing Common Lakshana of Hridroga (C.S.Ci. 26/78)

S.No.	Lakshana (Signs and Symptoms)	Charaka Samhita
1.	*Vaivayama*	+
2.	*Murcha*	+
3.	*Jvara*	+
4.	*Hikka*	+
5.	Svasa	+
6.	*Vairasya*	+
7.	*Trisna*	+
8.	*Chardi*	+
9.	*Kaphotklesa*	+
10.	*Ruja*	+
11.	*Aruci*	+
12.	*Moha*	+

The drug *arjuna* has been widely and frequently described in Samhita period. Caraka, Sushruta,Vagbhata etc. described it by the names of *arjuna*, *kakubha* etc.

Cardio vascular disease is the most frequent cause of adult death in the Western world, in U.K., one third of men and one quarter of women die as a result of ischemic heart disease. In many Western countries the incidence of ischaemic heart disease has been falling for last two or three decades, but it is rising in Eastern Europe and in the Indian sub continent, which has led to predictions that cardiovascular disease will soon become the leading cause of death in all continents.

CHEST PAIN

Chest pain is a common presentation of cardiac disease, but can also be manifestation of anxiety or of disease of lungs or musculoskeletal system or the gastro intestinal system.

SOME COMMON CAUSES OF CHEST PAIN [5]

(A) Central

- Anxiety/emotion (may also cause peripheral chest pain)
- Cardiac
  - Myocardial ischaemia (Angina)
  - Myocardial infraction
  - Myocarditis
  - Pericarditis
  - Mitral valve prolapse
- Aortic
  - Aortic dissection
  - Aortic aneurism
- Oesophageal
  - Oesophagitis
  - Oesophagialspasm
  - Mollory-Weiss syndrome
- Massive pulmonary embolus
- Mediastinal
  - Tracheitis
  - Malignancy

(B) Peripheral

- Lung/Pleura
  - Pulmonary infarct
  - Pneumonia
  - Pneumothorax
  - Malignancy
  - Tuberculosis
  - Connective tissue disorder
- Musculoskeletal
  - Oesteoarthritis
  - Ribfracture/injury
  - Intercostal muscle injury
  - Costochondritis
  - Epidemic myalgia
- Neurological
  - Prolapsed intervertebral disc
  - Herpes zoster
  - Thoracic outlet syndrome

CHARACTERISTIC OF ISCHAEMIC CARDIAC PAIN[5]

A number of key characteristics help to distinguish cardiac pain from that of other cause. Diagnosis may be difficult and it is often helpful to classify discomfort as possible, probable or definite ischaemic cardiac pain based on balance of evidence.

Table. No. 2. Characteristic of Ischaemic Cardiac Pain

Characters	Ischaemic cardiac pain	Non ischaemic cardiac pain
Location	Central or diffuse	Peripheral, localized
Radiation	Jaw/neek/shoulder/arm occasionally back	Other or no radiation
Character	Tight, squeezing choking	Sharp, stabbing, catching
Precipitation	Precipitated by exertion/ emotion	Spontaneous, not related to exertion, provoked by posture, respiration or palpation
Relieving factors	Rest, Quick response to nitrate	Not relived by rest slow or no response to nitrate
Associated features	Breathlessness	Respiratory, gastrointestinal, locomotor or psychological

SITE OF ORIGIN OF PAIN[5]

Cardiac pain is typically located in the center of chest because of the derivation of the nerve supply to the heart and mediastinum.

RADIATION[5]

Ischaemic cardiac pain, especially when severe, may radiate to the neck, jaw and upper or even lower arms, occasionally, cardiac pain may be experienced only at the sites of radiation or in the back. Pain situated over the left anterior including pleural, lung disorders, musculoskeletal problems and anxiety.

CHARACTER OF THE PAIN[5]

Cardiac pain is typically dull, constricting chocking or heavy and is usually described as squiring, crushing, burning or aching but not sharp, stabbing, pricking or knife like. The sensation can be described as breathlessness and the victim may complain of discomfort rather than pain, patient typically uses characteristic hand gesture when describing ischaemic pain.

MATERIAL AND METHOD

The subject for the clinical study was taken randomly out of the patients attended O.P.D. of Dravyaguna and Kayachikitsa Ayurvedic wing of Sir Sunderlal Hospital, Banaras Hindu University, Varanasi is between December 2006 and January 2009.

72 patients were registered, out of which only 60 completed the treatment along with follow up and 12 patients did not turn up. The selected patients were suffering from Angina pectoris, with or without hypertension.

Exclusion Criteria

Patients with any of the following associated conditions were excluded from the study.

- Kidney disorders
- Hepatic disorders
- Chronic obstructive lung disease (COPD)
- Diabetes mellitus
- Moderate to severe congestive heart failure
- Thyrotoxicosis and other endocrine disorders

Inclusion Criteria

- Intensity of chest Pain
- Site of Chest Pain
- Radiation of Chest Pain
- Nature of Chest Pain
- Duration of Chest Pain
- Anidra (Insomnia)
- Chinta (Aniety)
- Bhaya (Fear)
- Krodha (Anger)
- Shoka (Grief)
- Hypertension
- Lipid profile
- ECG
- TMT

Parameters for Assessment

- Thus in order to evaluate the response of the drug in *hridroga* (angina pectoris), the assessment of result was done on the basis of subjective as well as objective parameters.

- Subjective assessment was based on signs and symptoms of *hridroga* (angina pectoris) i.e.- intensity of chest pain, site of chest pain, radiation of chest pain, nature of chest pain, duration of chest pain, *anidra* (insomnia), *chinta* (anxiety), *bhaya* (fear), *krodha* (anger), *shoka* (depression) etc.

- Objective assessment was based on-serum cholesterol, serum triglyceride, serum low density lipoproteins, serum high density lipoproteins, Serum very low density lipoproteins systolic blood pressure and diastolic blood pressure.

- All the patients presenting with complaints of retrosternal chest pain radiating to left arm or towards neck with minimum of two month duration having Ischemic changes, ECG (T-wave inversion) and TMT were included in the present study.

Table No 1: The criteria were adopted as recommended by WHO which is as follows

Category	Systolic	Diastolic
Normal	< 135	< 85
High normal	135 – 139	86 – 89
Hypertension • Stage – I (mild) • Stage –II (moderate) • Stage – III (severe) • Stage – IV (Very severe)	 140 – 159 160 – 179 180 – 209 > 210	 90 – 99 100 – 109 110 – 119 > 120

A. DEMOGRAPHIC STUDY

Distribution of the Patients on the basis of Gender

Gender distribution is shown in table 19 (fig.19) as it is evident from the table out of total 60 patients; 38 (63.3%) were males while 22 (36.7%) were females.

Table No 2. Distribution of the Patients on the basis of Gender

Gender	Group A	Group B	Group C	Frequency	Percentage
Male	11	14	13	38	63.30
Female	09	06	07	22	36.70
Total	20	20	20	60	100.00

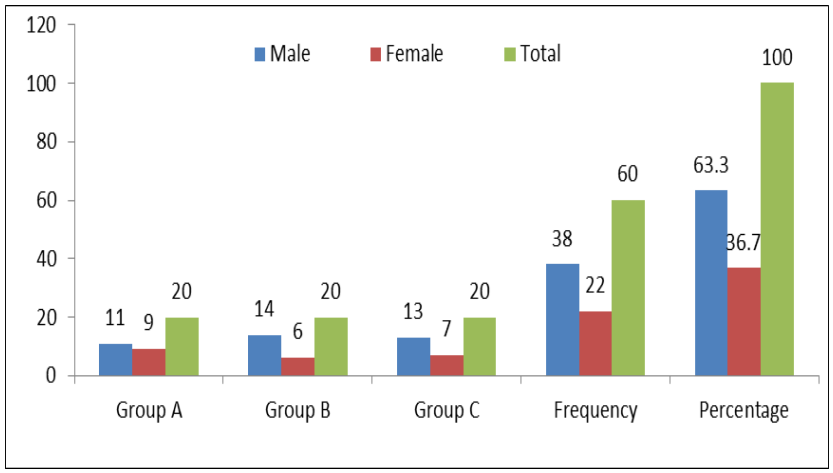

Fig. No.1.

Distribution of the Patients on the basis of Age

Age distribution of all the 60 patients are shown in table 20 (fig. 20). All the patients were divided into 6 age groups i.e., 20-29 years, 30-39 years, 40-49 years, 50-59 years, 60-69 years and 70-79 years. Maximum 24 patients (40%) were between 50-59 age group, followed by 14 patients (23.3%) between 60-69 age group, 7 patients (11.7%) in between 40-49 age group, 6 (10.0%) patients in between 70-79 age group and minimum 3 patients (5.0%) were between the age group of 20-29 years.

Table No.3: Distribution of the Patients on the basis of Age (in Years)

Age Group	Group A	Group B	Group C	Frequency	Percentage
20-29	01	02	-	03	5.00
30-39	03	02	01	06	10.00
40-49	03	02	02	07	11.70
50-59	08	07	09	24	40.00
60-69	04	04	06	14	23.30
70-79	01	03	02	06	10.00
Total	20	20	20	60	100.00

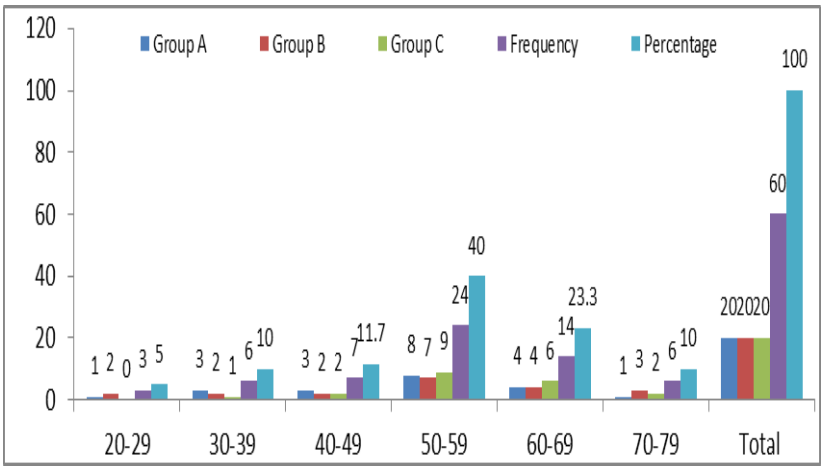

Fig . No. 2

Distribution of the Patients on the basis of Marital Status

Table 21 (fig. 21), shown the distribution of marital status of 60 patients in which married patients were 51 (85.0%) and unmarried were 9 (15.0%).

Table No: 4 Distribution of the Patients on the basis of Marital Status

Marital Status	Group A	Group B	Group C	Frequency	Percentage
Married	16	17	18	51	85.00
Unmarried	04	03	02	09	15.00
Total	20	20	20	60	100.00

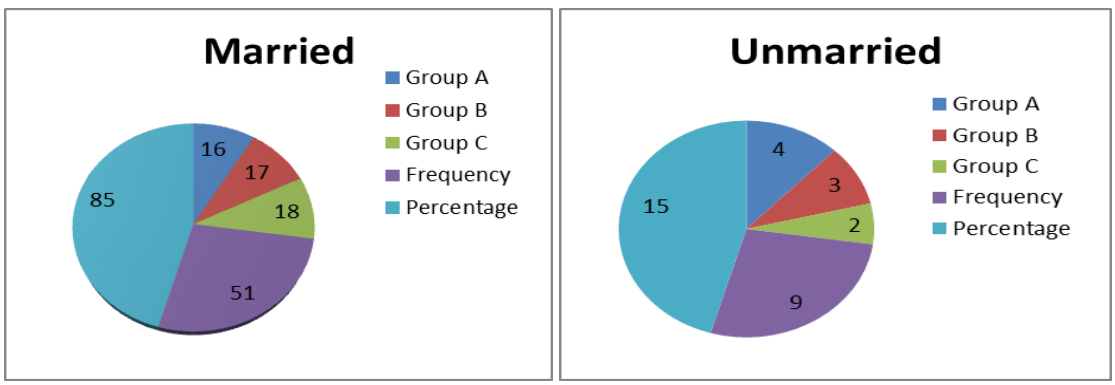

Fig. No. 3

Distribution of the Patients on the basis of Occupation

Table 22 (fig.22), shown that the occupational distribution of patients were as follows– maximum 15 (25%) and 14(23.3%) patients were house wives and retired persons respectively. Next were Office workers 8 (13.3%), followed by Businessmen 7 (11.7%), professional 6 (10%), Teachers 5 (8.3%), students 3 (5%) and labors 2 (3.3%).

Table No. 5: Distribution of the Patients on the basis of Occupation

Occupation	Group A	Group B	Group C	Frequency	Percentage
House wives	05	04	06	15	25.00
Businessmen	04	01	02	07	11.70
Office workers	03	02	03	08	13.30
Professionals	02	03	01	06	10.00
Teachers	02	02	01	05	8.30
Labors	01	01	-	02	3.30
Retired Persons	02	05	07	14	23.30
Students	01	02	-	03	5.00
Total	20	20	20	60	100.00

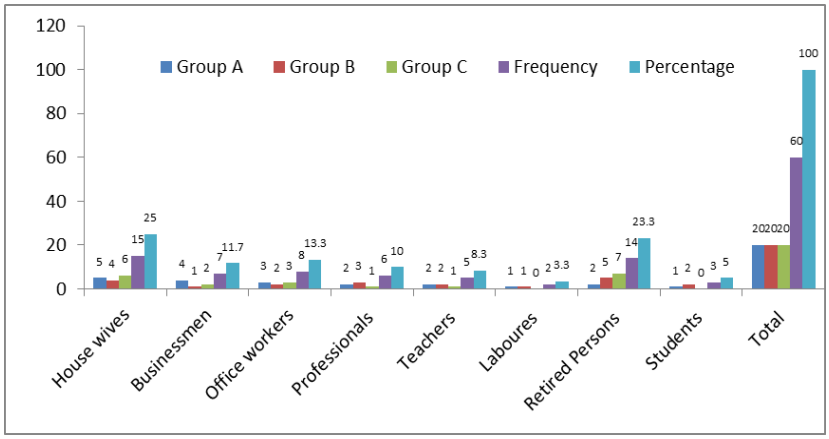

Fig . No. 4

Table No 6. Distribution of the patients on the basis of Socio-Economic Status

Economic Status	Group A	Group B	Group C	Frequency	Percentage
Poor class	02	02	01	05	8.30
Lower middle	10	07	04	21	35.00
Upper middle	06	09	11	26	43.30
Upper class	02	02	04	08	13.30
Total	20	20	20	60	100.00

Distribution of the Patients on the basis of Socio-Economic Status

Table 23 (fig. 23) , shown distribution of the patients on the basis of their socio-economic status in four different categories. Maximum 26 (43.3%%) patients belonged to the upper

middle class, followed by 21 (35%) patients from lower middle class, 8 (13.3%) patients from upper class and minimum 5 (8.3%) patients were of poor class.

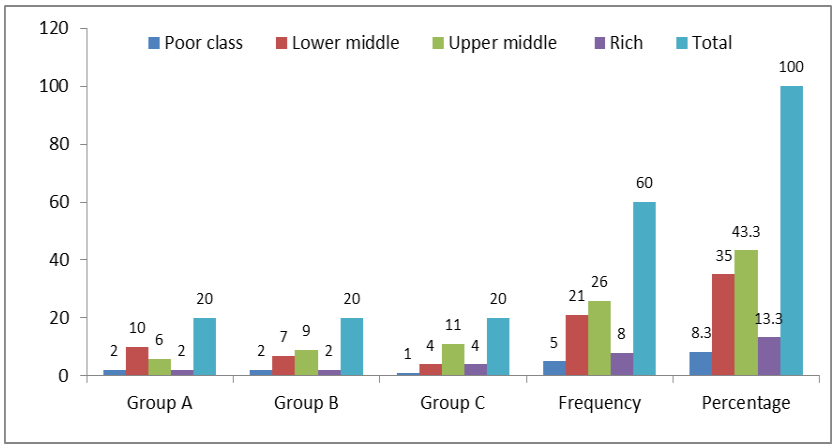

Fig. No. 5

Distribution of the Patients on the basis of Dietary Habits

Dietary habits as found in patients of all three groups are shown in table 24 (fig. 24). Out of the total 60 patients, maximum 34 (56.7%) were vegetarian and 26 (43.3%) were non-vegetarian.

Table No.7: Distribution of the Patients on the basis of Dietary Habits

Dietary Habits	Group A	Group B	Group C	Frequency	Percentage
Vegetarian	10	11	13	34	56.70
Non-vegetarian	10	09	07	26	43.30
Total	20	20	20	60	100.00

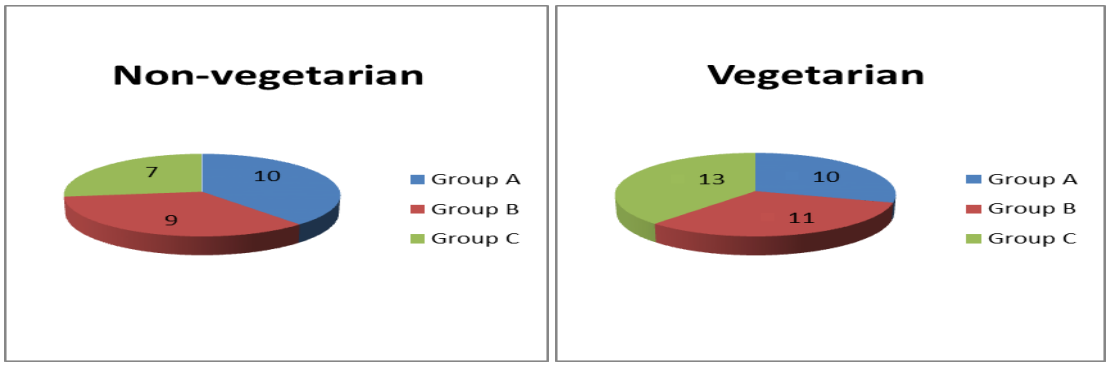

Fig. No.6:

Distribution of the Patients on the basis of Addiction

As evident from table 25 (fig. 25), maximum 28 (46.7%) patients were not habituated to any kind of addiction, while, tobacco was the most preferred addiction in 16 (26.7%) patients,

followed by smoking-8 (13.3%) patients, alcohol 6 (10%) patients. Only 2 (3.3%) patients were found having addiction of Bhang. Thus total addicts were 32 (53.3%).

Table No.8: Distribution of the Patients on the basis of Addiction

Addiction	Group A	Group B	Group C	Frequency	Percentage
Tobacco	03	06	07	16	26.70
Smoking	05	02	01	08	13.30
Alcohol	03	-	03	06	10.00
Bhang and Others	01	01	-	02	3.30
None	08	11	09	28	46.70
Total	20	20	20	60	100.00

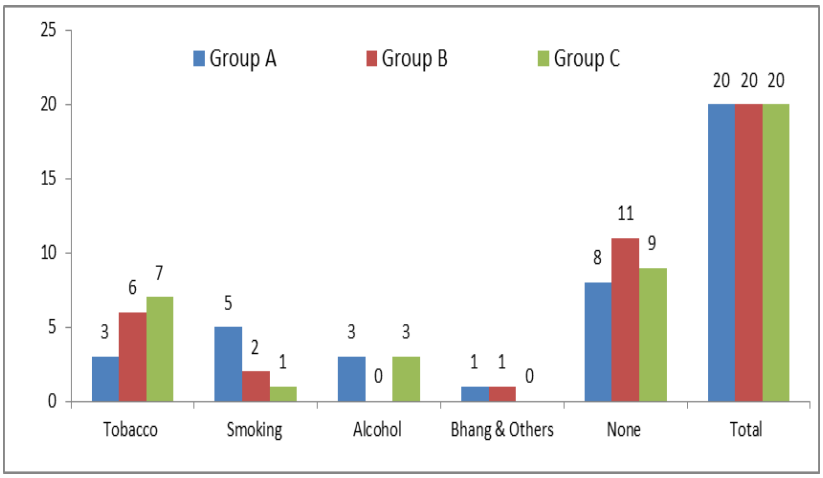

Fig.No.7:

Distribution of the Patients on the basis of Physical Activity

Out of the total 60 patients, maximum 34 (56.7%) patients were moderately active, 16 (26.7%) patients had sedentary life style followed by 10 (16.7%) patients who were physically very active. It had been shown in table 26, (fig. 26).

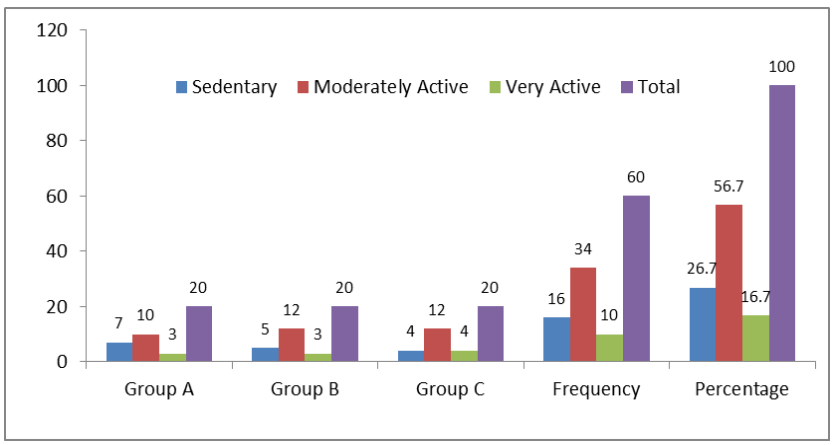

Fig. No. 8:

Table No. 9. Distribution of the Patients on the basis of Physical Activity

Physical Activity	Group A	Group B	Group C	Frequency	Percentage
Sedentary	07	05	04	16	26.70
Moderately Active	10	12	12	34	56.70
Very Active	03	03	04	10	16.70
Total	20	20	20	60	100.00

Distribution of the Patients on the basis of Salt Intake

The distribution of daily salt intake in 60 patients were as follows: less than 5 g/day, 5-10 g/day or more than 10 g/day, are shown in table 29 (fig.29). It is obvious that 36 (60%) patients were consuming 5-10 g salt daily followed by 14 (23.3%) patients were consuming less than 5 g/day and only 10 (16.7%) patients were consuming 10 g salt per day.

Table No. 10: Distribution of the Patients on the basis of Salt Intake

Salt Intake (per day)	Group A	Group B	Group C	Frequency	Percentage
Less than 5 g	03	06	05	14	23.30
5-10 g	14	12	10	36	60.00
More than 10 g	03	02	05	10	16.70
Total	20	20	20	60	100.00

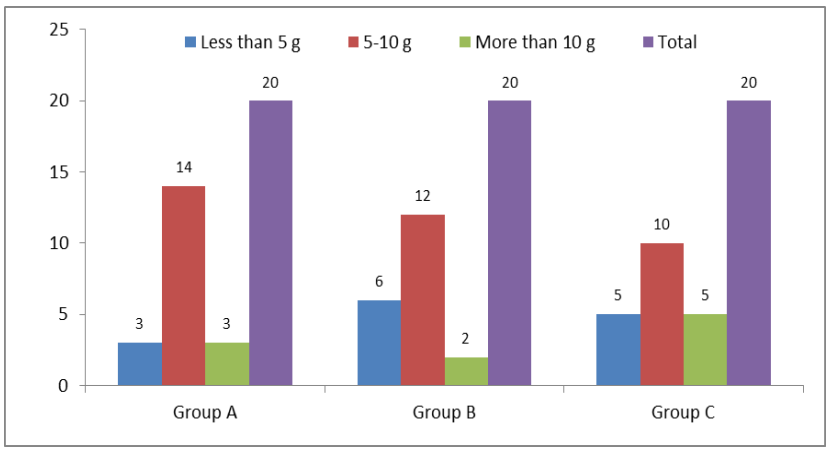

Fig. No. 9

SUMMARY AND CONCLUSION

The drug *arjuna* is of natural origin and in use since ancient times i.e. 1000 BC. Charak Samhita (1000 BC) and Sushruta Samhita (1000 BC) are the original scriptures in which *arjuna* and its synonyms, properties, action and therapeutic uses are elaborated. Its bark prescribed as *udardaprashamana* in Caraka Samhita and kushthanga, pramehagna, panduhara etc in Sushruta Samhita, similar uses are seen in later works.[1, 2] Though, references of *Hriodroga* are seen in Brihattrayi but its use in *hridroga* in the *kshirapaka* dosages form is

seen in first time in Vrinda Madhava. Later work followed Vrinda Madhava and in a few of the work, same the verse is found. Apart from that *arjuna churna*, *ghrita*, *guda* preparations are also prescribed. In Bhaishajya Ratnavali, *arjuna's* self generated alcoholic preparation in the name of Parthyadi Rishta is seen. Various research scholars as well as medical researchers found its activities as anti-ischemic, hypotensive, anti-anginal, improvement in TMT performance, improvement in sign and symptoms of heart failure, anti platelet aggregating, hypocholesteraemic and arjuna as hridya (Joshi Manish, Joshi Vinod Kumar, Gupta P.R – 2002). In experimental studies, significant effect on blood pressure, reduction in venous and related capillary embolism. In view of the clinical and experimental observation along with use of *arjuna* in *hridroga*, as found in Ayurvedic classics. The *kshirapaka* preparation of *arjuna* is evaluated in agina pectoris (*hridroga*) with or without hypertension in 60 clinical patients. The drug showed reduction in the intensity of pain, reduction in systolic and diastolic blood pressure. The trial drug is found better in systolic hypertension. After three months treatment the trial drug found to reduce; serum cholesterol, serum triglyceride, serum low density lypoprotein (LDL), serum very low density lipoprotein (VLDL) except HDL. Our finding corroborate the findings of the previous workers. The drug also found effective in the management of anxiety, fear, which have been mentioned as important psychological causes of development of *hridroga*. In the trial group the drug showed changes in ECG in 40% patients.

The aforesaid evidences and experiences give positive output that *Arjuna kshirapaka*, a medicated milk preparation is effective in Angina pectoris (*Hridroga*), which needs a larger number of data to communicate *Arjuna* as one of the best drug of plant origin in *Hridroga*.

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