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AYURVEDIC CONCEPT OF MEDOROGA W.S.R. TO OBESITY

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ABSTRACT

Acharya Charaka has mentioned Aharvidhividhana[1], the dietetic rules and codes of conduct for every season. But now a day's people do not follow the rules of diet intake, Regimen mentioned in Ritucharya. *Acharya Charka* has quoted *Medoroga[2] (Sthaulya)* under the eight varieties of impediments which are designated as *Ashta-NinditaPurusha[3] (Ch.Su28\15.).* Abnormal accumulation of Meda Dhatu in body is defined as 'Medovruddhi'. The situation behind it is 'Medovaha Srotodusti'. Medovruddhi[4] is a complex process which occurs due to Medodhatwagnimandya, which leads to excess homologues Poshaka Meda Dhatu in circulation which can be referred to the conditions such as 'Medoroga'. Now a day's *Medoroga* i.e. Obesity has become a big problem in the world. It has been noted that this disease is associated with higher frequency of hyperlipidemia[5] & atherosclerosis, causing increased mortality and morbidity not only in western countries but in India too. The main objective of this study is to determine the effectiveness of honey in improving obesity[5] and Medoroga. After administration of trial drug Honey, the improvement in grading for signs and symptoms of Medoroga of patients of experimental group between pre (baseline) and post intervention found to be statistically significant.

Kshudra Shwasa, Pipasa-atiyoga, Nidradhikya, Daurbalya and Sandhi shoola of patients of group A (experimental group) and group B (control group) found to be significantly better and improved after intervention of trial drug Honey as compared to pre (baseline) treatment stage. Overall, outcomes of study indicate the effectiveness of Honey among patients suffered from Medoroga.

KEYWORD: *Medoroga*, Meda Dhatu, *Agni*, *Honey*, *Obesity.*

INTRODUCTION

The *Vedas*, the earliest written records of Indian literature have elaborated description about human diseases which effect normal body functions and the various ways and means to get ride off them. It shows causativeness in human beings by which they attempted to alleviate their sufferings.

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Acharya Charka has quoted *Medoroga (Sthaulya)* under the eight varieties of impediments which are designated as *Ashta-Nindita Purusha*. *Acharya Charaka* also lists this problem under *Santarpanajanita Vyadhi*. *Dalhana* seems to be more explicit while commenting on *Medoroga*. He specified the *Agni* which is involved in pathogenesis of the disease viz *Medo* Dhatvagnimandya. Susruta discussed the Dhatu PradoshajaVikaras in the Sutras sthana but the description is very short. While Vagbhata (A.S. and A.H.) not used the term separately for the Vikaras in his text. Medoroga as mentioned in Ayurveda can be correlate with obesity disease as described in modern science.

It is very interesting to know whether these terms are only mirror images of Dhatu Pradoshaja or represents a different status of Dhatu in the pathogenesis. So question arises whether this term signify vitiation of Doshas or represent the status of Depravity of Dhatus in the Pathogenesis.

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Abnormal accumulation of Meda Dhatu in body is defined as ‘Medovruddhi’. The situation behind it is ‘Medovaha Srotodusti’. Medovruddhi is a complex process which occurs due to Medodhatwagnimandya, which leads to excess homologues Poshaka Meda Dhatu in circulation which can be referred to the conditions such as ‘Medoroga’.

In India there is the world's largest population of diabetics and this number - already at 37 million - is set to more than double in the next 25 years, according to the World Health Organization (WHO).[6] Approximately 85% of people with diabetes are type 2, and of these, 90% are obese or overweight.

University of North Carolina study conducted in Andhra Pradesh showed that 37 percent of women living in cities are clinically overweight or obese, and a study by the All India Institute of Medical Sciences (AIIMS), Delhi found that 76 percent of women in Delhi suffer from abdominal obesity. Some researchers have even gone so far as to suggest that Indians are genetically more likely to store fat due to a 'thrifty gene' that evolved out of under-nourishment in the past

Group A: MADHU (HONEY) 10 ML + 10 ML LUKE WARM WATER

Group B: LUKE WARM WATER (10 ML) (PLACEBO)

STATISTICAL METHODOLOGY

Research design

The design of research study is an "Experimental/Interventional Research Design"

Study Set Up

The study had conducted at Outdoor and Indoor patient departments of Late Dr. Pt. Shiv Shaktilal Sharma Ayurvedic Medical College & Hospital, Ratlam (Madhya Pradesh).

Subjects

Patients who either visited OPD or admitted to hospital were screened for present study from **November 2019 to January 2020 according** to inclusion-criteria and after satisfying the inclusion criteria chosen as subjects. The informed consent was taken and those who agreed to participate in the present study were included.

Study Duration

The duration of study was 45 days: November 2019 to January 2020.

Statistical Technique

The raw data entered into the computer database. The responses of frequencies were calculated and analyzed by using the raw data of 60 subjects. Microsoft excels sheet and statistical software[7], SPSS version[8] 17.0 trials used for analysis of gathered data. Prevalence of an outcome variable along with 95% confidence limits was calculated.

Both, descriptive and inferential statistics were used to study obesity and Medoroga and selected outcomes among selected patients in order to achieve the specific objectives of the present study.

Sampling

A probability sampling technique was used to recruit a sample that met inclusion-exclusion criterion for this study. Simple random sampling technique used to select the required samples from the population of OPD and IPD patients while allocation of a group to a sample was also done by using a simple random sampling technique.

Inclusion Criteria

1. Patients of both the sexes.
2. Patients aged from 15 year to 50 year.
3. Patients who willing to participate in the present study

Exclusion Criteria

1. Patients below the age of 15 years and above 50 years of age.
2. Patients who were not willing to participate in the present study.

OBSERVATIONS AND RESULTS

Table 1.1: Frequency and Percentage Distribution of Age of Patients.

Age of Patient	Group A		Group B	
	Frequency (n_1)	Percentage (%)	Frequency (n_2)	Percentage (%)
20-30 year	9	30.0	5	16.7
31-40 year	10	33.3	16	53.3
41-50 year	11	36.7	9	30.0
Total	30	100.0	30	100.0

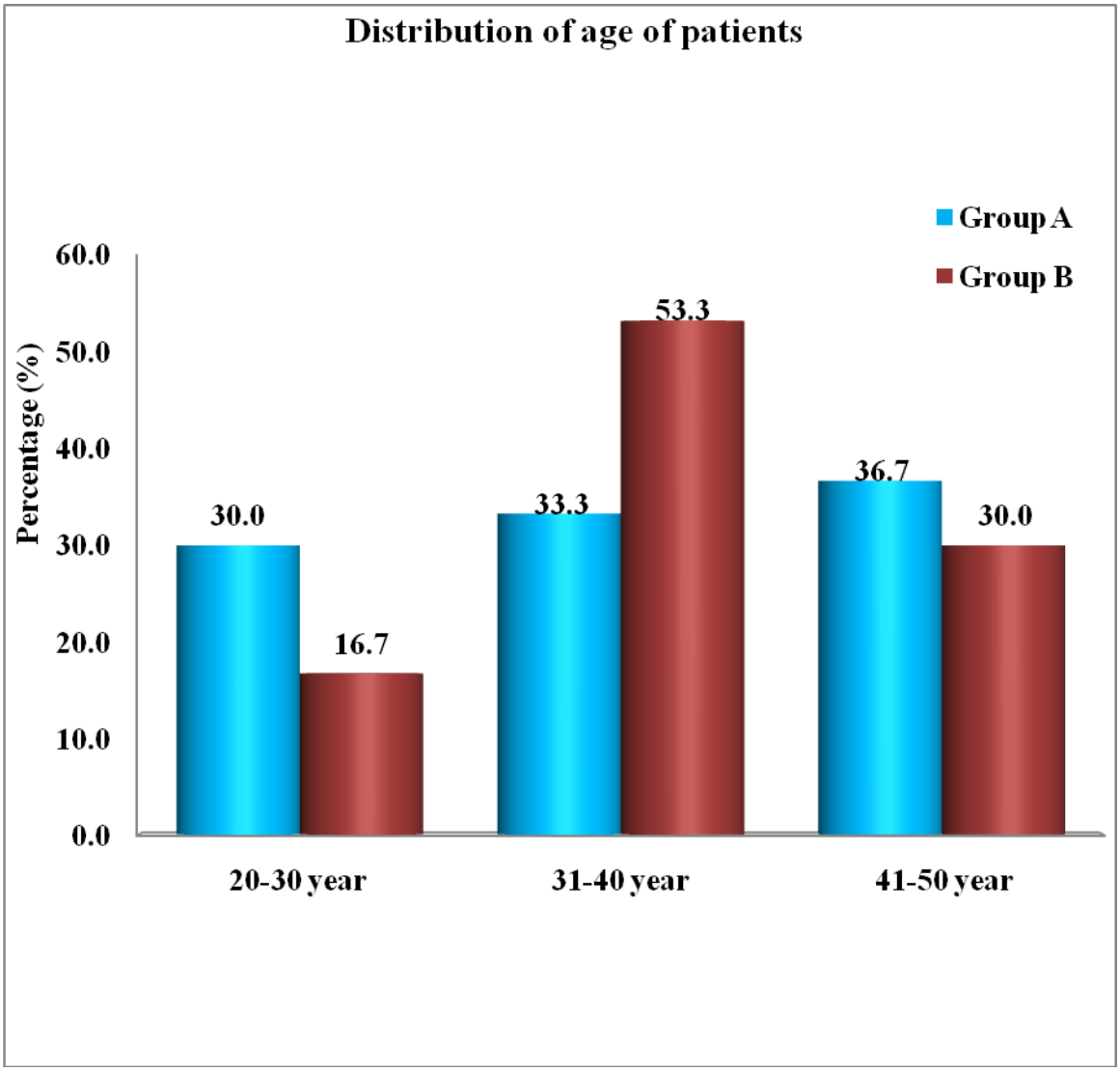

Figure 1.1: Bar diagram depicting the distribution of the age of patients of group A and group B.

Table 1.2: The Frequency and Percentage Distribution of Gender of Patients.

Gender	Group A		Group B	
	Frequency (n_1)	Percentage (%)	Frequency (n_2)	Percentage (%)
Male	11	36.7	8	26.7
Female	19	63.3	22	73.3
Total	30	100.0	30	100.0

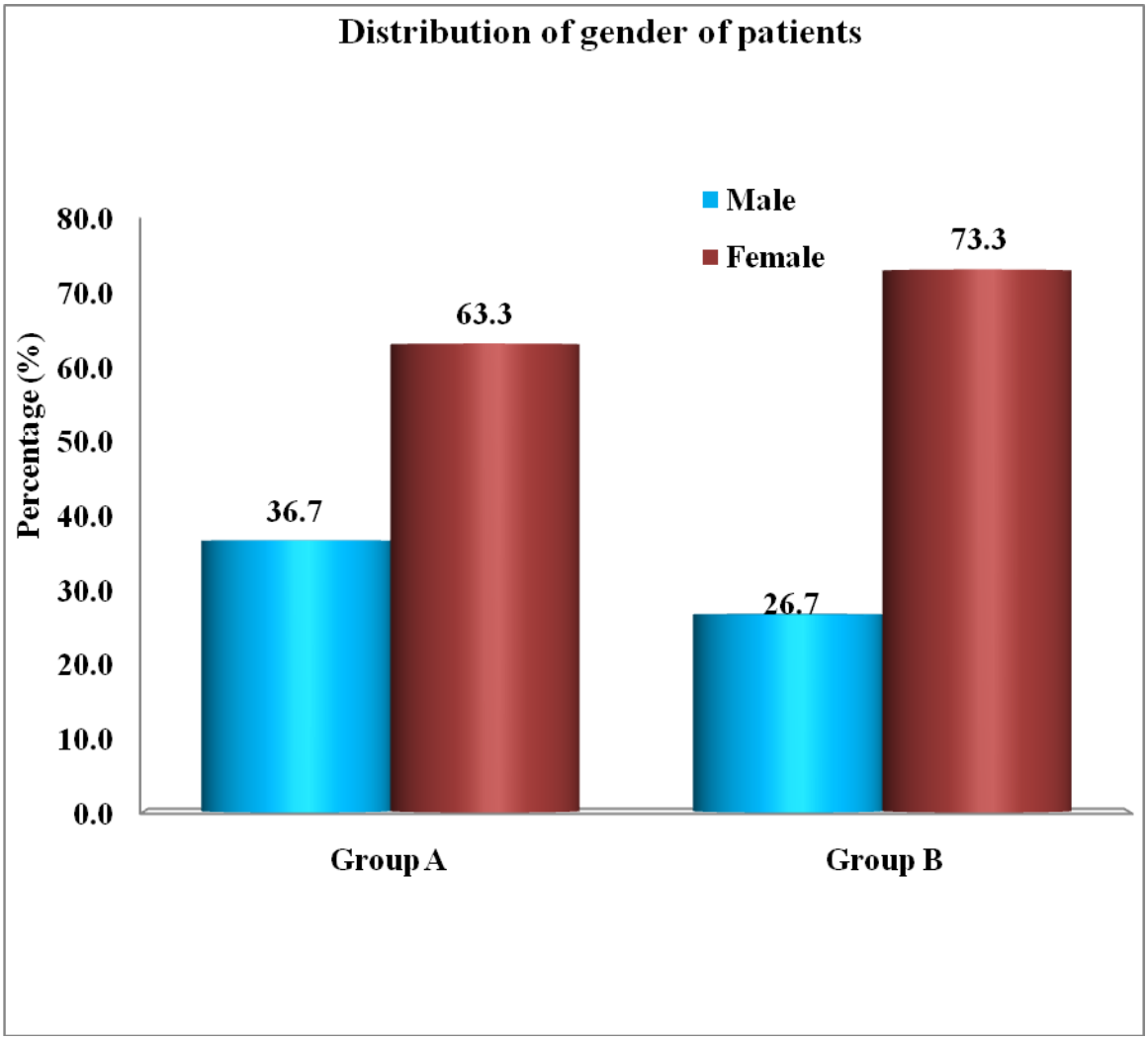

Figure 1.2-Bar diagram depicting the distribution of the gender of patients of group A and group B.

Table 1.3: The Frequency and Percentage Distribution of Marital Status of Patients.

Marital Status	Group A		Group B	
	Frequency (n_1)	Percentage (%)	Frequency (n_2)	Percentage (%)
Unmarried	4	13.3	3	10.0
Married	26	86.7	27	90.0
Total	30	100.0	30	100.0

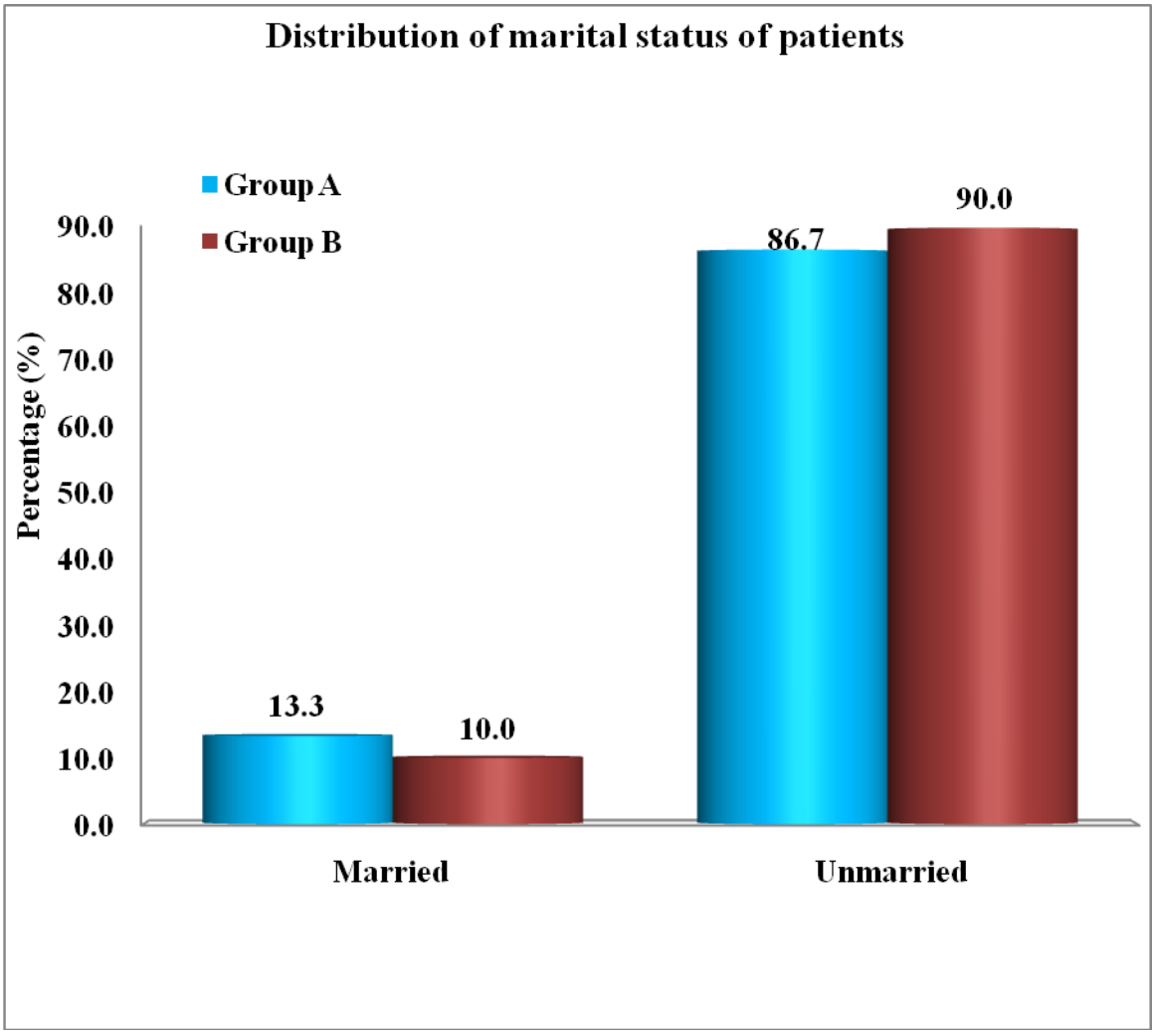

Figure 1.3-Bar diagram depicting the distribution of the marital status of patients of group A and group B.

Table 1.4: Frequency and Percentage Distribution of Prakrati of Patients.

Prakrati of Patient	Group A		Group B	
	Frequency (n_1)	Percentage (%)	Frequency (n_2)	Percentage (%)
Kapha Pitta	10	33.3	8	26.7
Vata Pitta	8	26.7	5	16.7
Kapha Vata	12	40.0	17	56.6
Total	30	100.0	30	100.0

Table 1.4 reports the distribution of prakrati of studied patients. Prakrati of patients of

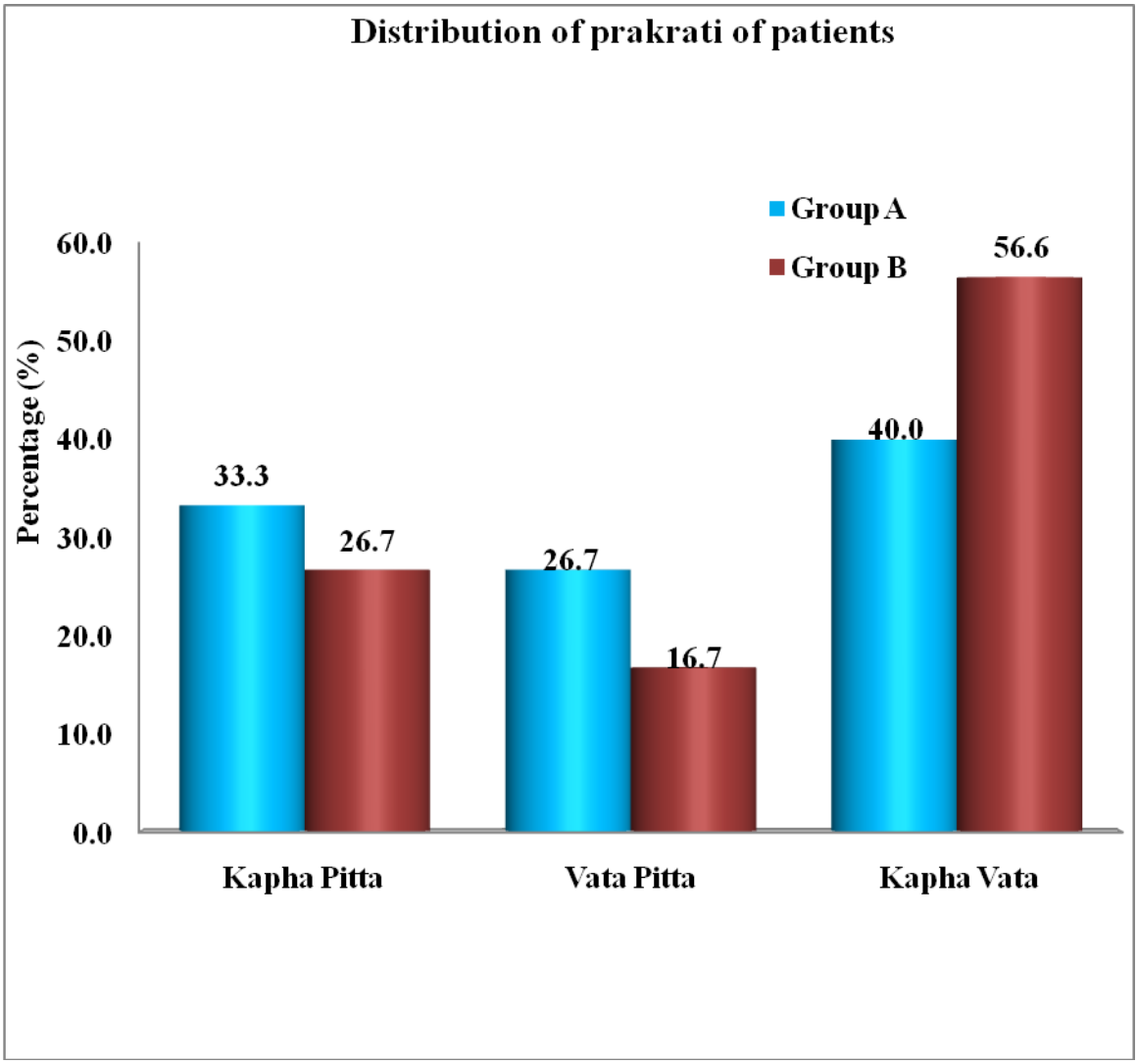

Figure 1.4: Bar diagram depicting the distribution of the prakrati of patients of group A and group B.

Table 1.5: The Frequency and Percentage Distribution of Dietary Pattern of Patients.

Dietary Pattern	Group A		Group B	
	Frequency (n_1)	Percentage (%)	Frequency (n_2)	Percentage (%)
Vegetarian	9	30.0	10	33.3
Mix	21	70.0	20	66.7
Total	30	100.0	30	100.0

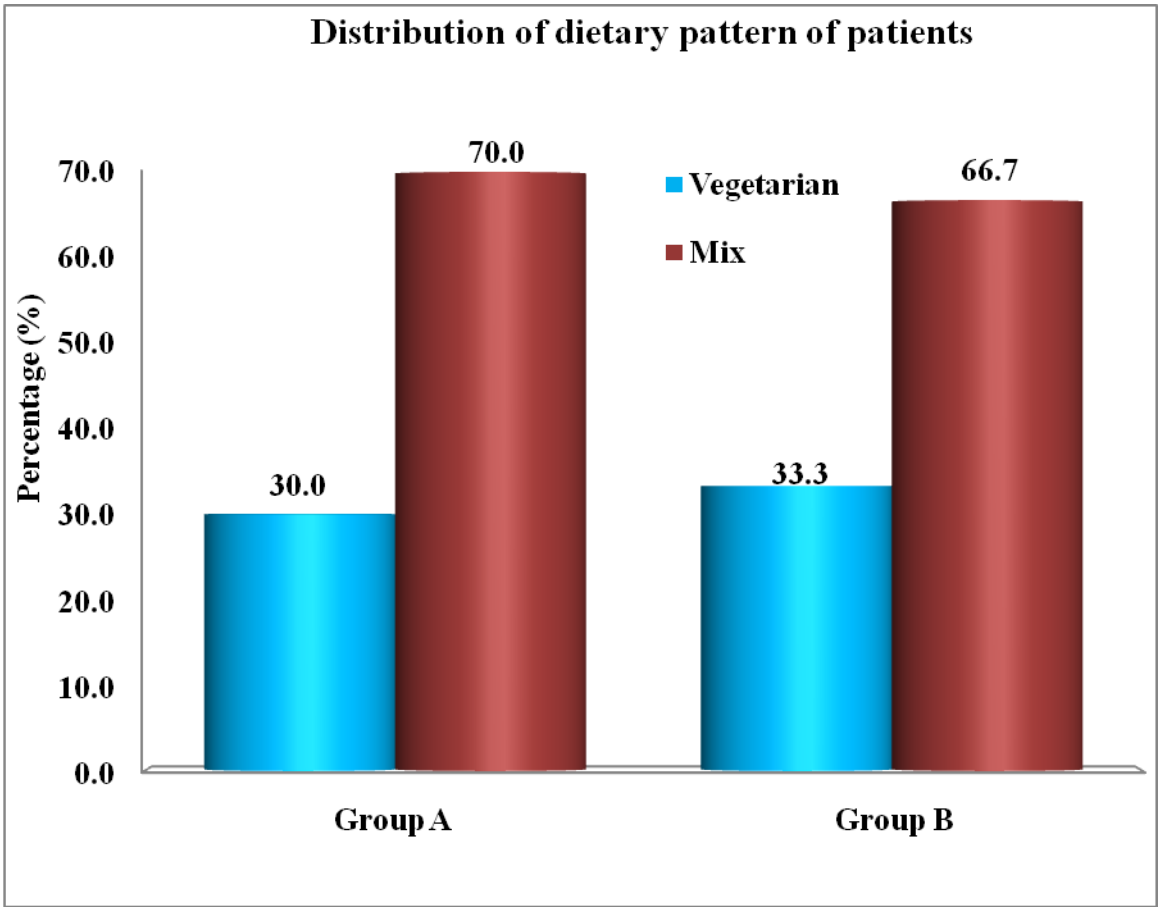

Figure 1.5: Bar diagram depicting the distribution of the dietary pattern of patients of group A and group B.

Table 1.6: The Frequency and Percentage Distribution of bowel Habit of Patients.

Bowel Habit	Group A		Group B	
	Frequency (n_1)	Percentage (%)	Frequency (n_2)	Percentage (%)
Constipation	18	60.0	11	36.7
Regular	12	40.0	19	63.3
Total	30	100.0	30	100.0

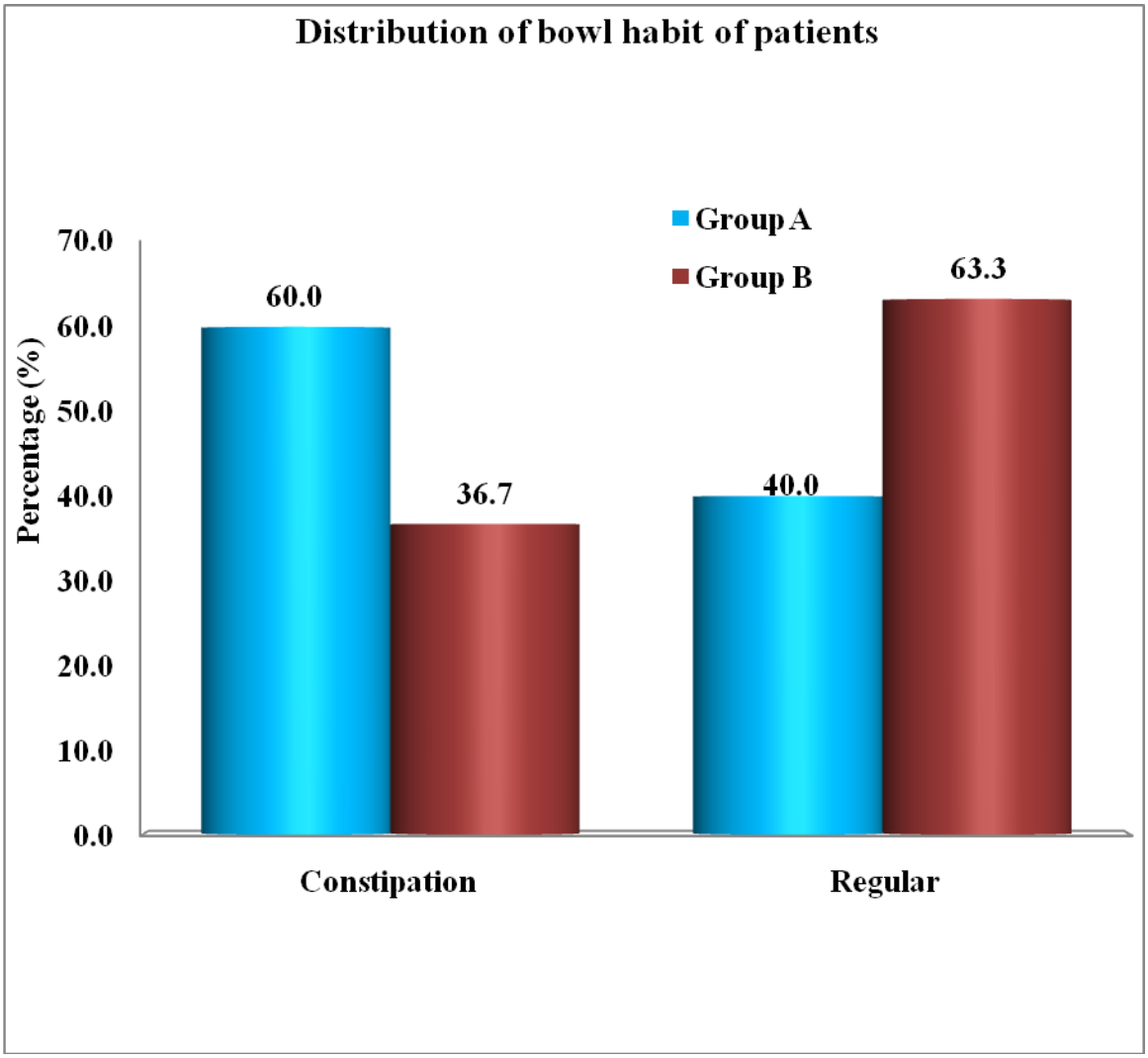

Figure 1.6-Bar diagram depicting the distribution of the bowel habit of patients of group A and group B.

Table 1.7: The Frequency and Percentage Distribution of Stress of Patients.

Stress of patients	Group A		Group B	
	Frequency (n_1)	Percentage (%)	Frequency (n_2)	Percentage (%)
Present	19	63.3	15	50.0
Absent	11	36.7	15	50.0
Total	30	100.0	30	100.0

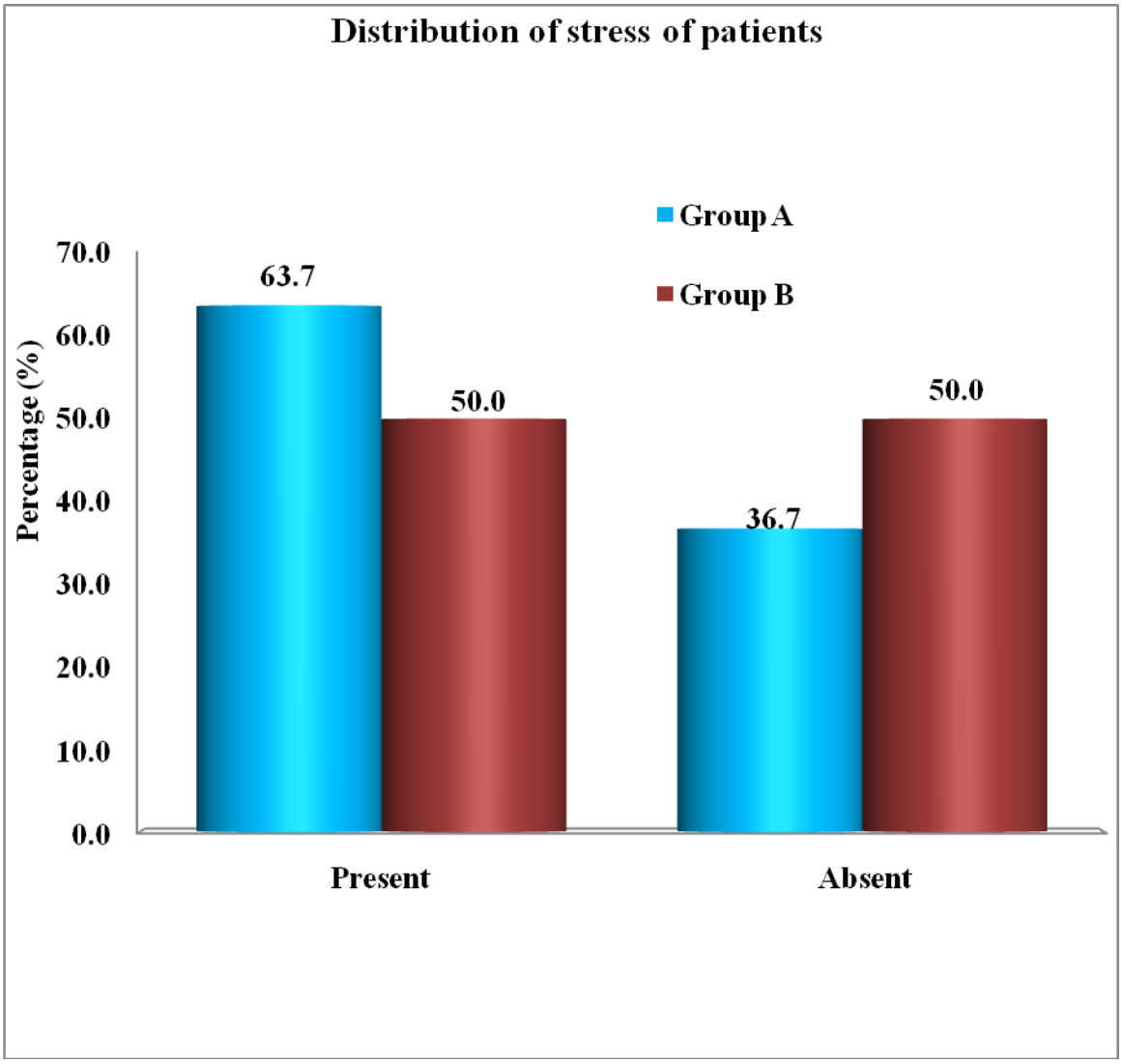

Figure 1.7-Bar diagram depicting the distribution of the stress of patients of group A and group B.

Table 1.8: Frequency and Percentage Distribution of Nature of Work of Patients.

Nature of work of Patient	Group A		Group B	
	Frequency (n_1)	Percentage (%)	Frequency (n_2)	Percentage (%)
Sedentary	19	63.3	23	76.7
Field work	10	33.3	7	23.3
Labour	1	3.3	0	0.0
Total	30	100.0	30	100.0

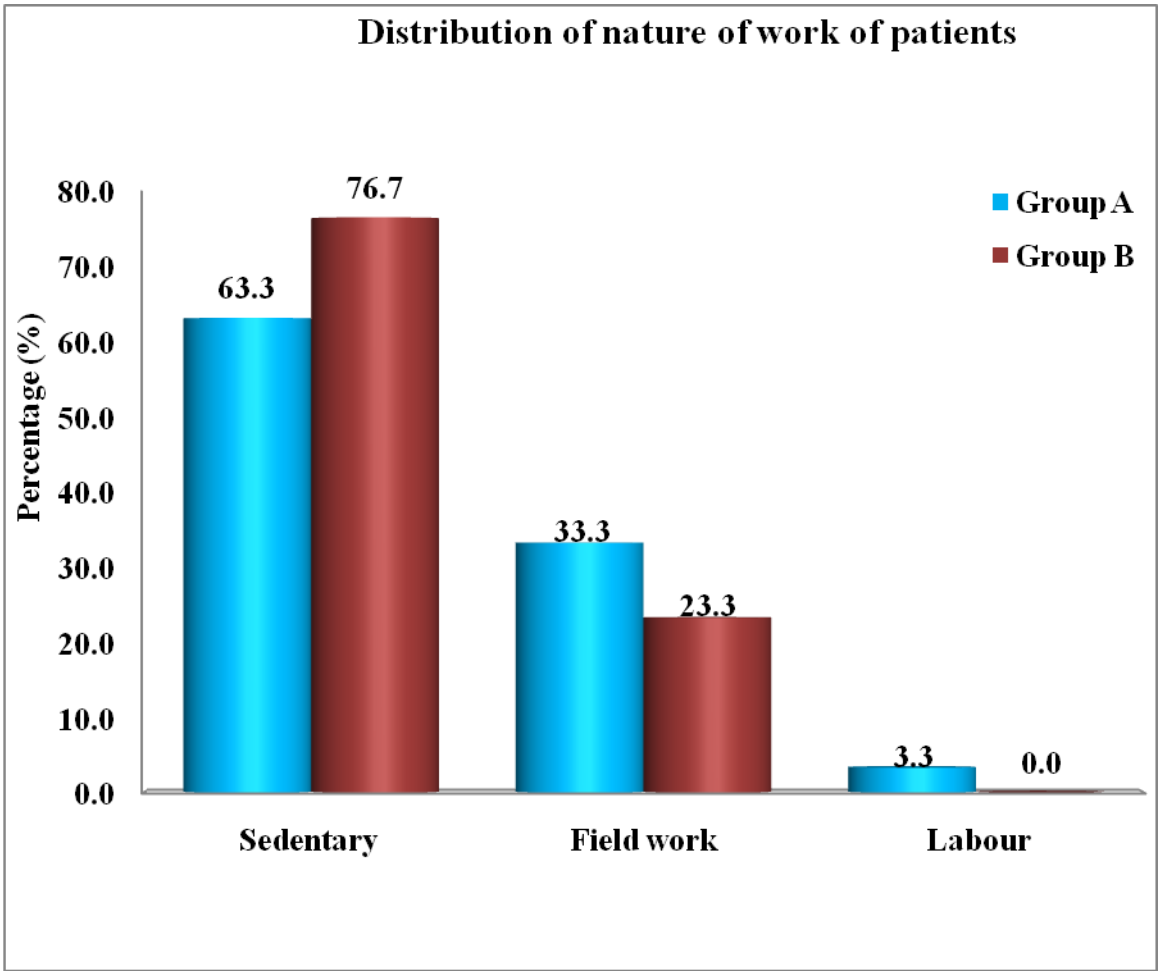

Figure 1.8: Bar diagram depicting the distribution of the nature of work of patients of group A and group B.

Table 1.9: frequency and percentage distribution of Dominance of rasa of patients.

Dominance of Rasa of Patient	Group A		Group B	
	Frequency (n_1)	Percentage (%)	Frequency (n_2)	Percentage (%)
Katu	14	46.7	8	26.7
Madhur	16	53.3	21	70.0
Lavana	0	0.0	1	3.3
Total	30	100.0	30	100.0

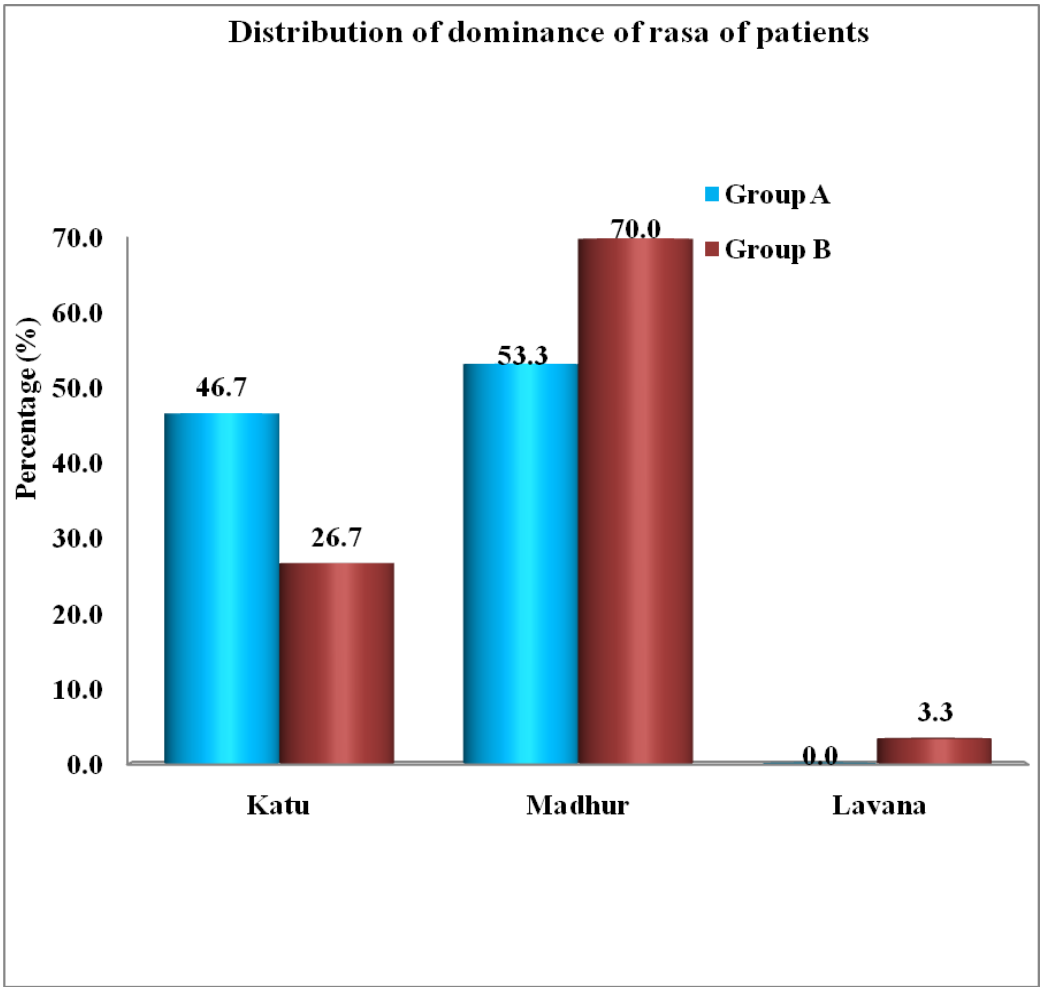

Figure 1.9-Bar diagram depicting the distribution of the dominance of rasa of patients of group A and group B.

4.1 SUBJECTIVE CRITERIA

Assessment of Obesity And Medoroga Among Patients Of Two Groups

Table 1.10: Assessment of Change of Body Weight and Body Mass Index of Patients of Groups, A and B From Pre To Post Treatment.

Gr	Parameter	Treatment Stage	Scatter Mean ± SD	Mean Diff	t-value	LOS
Group A	Body weight (kilogram)	*Pre*	82.63±7.90	11.13 kg	26.01	p<0.001 #
		Post	71.50±8.08			
	Body Mass Index (kg/meter^2)	*Pre*	33.87±2.35	7.97 kg/m^2	24.11	p<0.001 #
		Post	25.90±2.48			
Group B	Body weight (kilogram)	*Pre*	81.60±8.69	5.63 kg	9.68	p<0.001 #
		Post	75.97±8.40			
	Body Mass Index (kg/meter^2)	*Pre*	32.87±2.57	3.74 kg/m^2	13.17	p<0.001 #
		Post	29.13±2.37			

The mean differences are highly significant at the 0.001 level of significance. [Mean Diff-Mean Difference; LOS-Level of Significance]

Changes from baseline to post intervention in body weight and body mass index were documented to observe the improvement in obesity of patients of both the groups, A and B which can be easily identifies in table 4.10.

Table 1.11: Comparison In Body Weight and Body Mass Index Between Group A and Group B At Pre And Post Intervention.

Stage	Parameter	Group	Scatter Mean ± SD	Mean Diff	t-value	LOS
Pre-Intervention	Body weight (kilogram)	*Group A*	82.63±7.90	1.03 kg	0.48	$p>0.05^{\otimes}$
		Group B	81.60±8.69			
	Body Mass Index (kg/meter^2)	*Group A*	33.87±2.35	1.00 kg/m^2	1.58	$p>0.05^{\otimes}$
		Group B	32.87±2.57			
Post-Intervention	Body weight (kilogram)	*Group A*	71.50±8.08	4.47 kg	2.10	$p<0.05^{*}$
		Group B	75.97±8.40			
	Body Mass Index (kg/meter^2)	*Group A*	25.90±2.48	3.23 kg/m^2	5.16	$p<0.001^{\#}$
		Group B	29.13±2.37			

$^{\otimes}$ The mean difference is not significant (insignificant) at the 0.05 level of significance. * The mean difference is significant at the 0.05 level of significance. $^{\#}$ The mean difference is highly significant at the 0.001 level of significance. [Mean Diff-Mean Difference; LOS-Level of Significance]

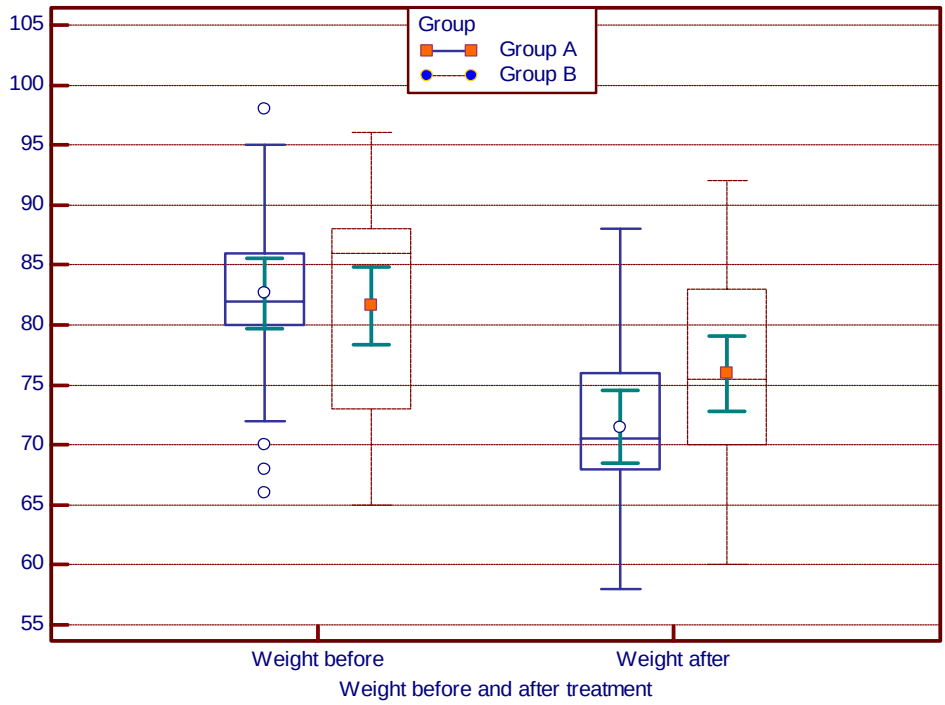

Figure 1.10: Box and whisker diagram depicting the comparison of body weight at baseline and post intervention between patients of experimental group (group A) and control group (group B).

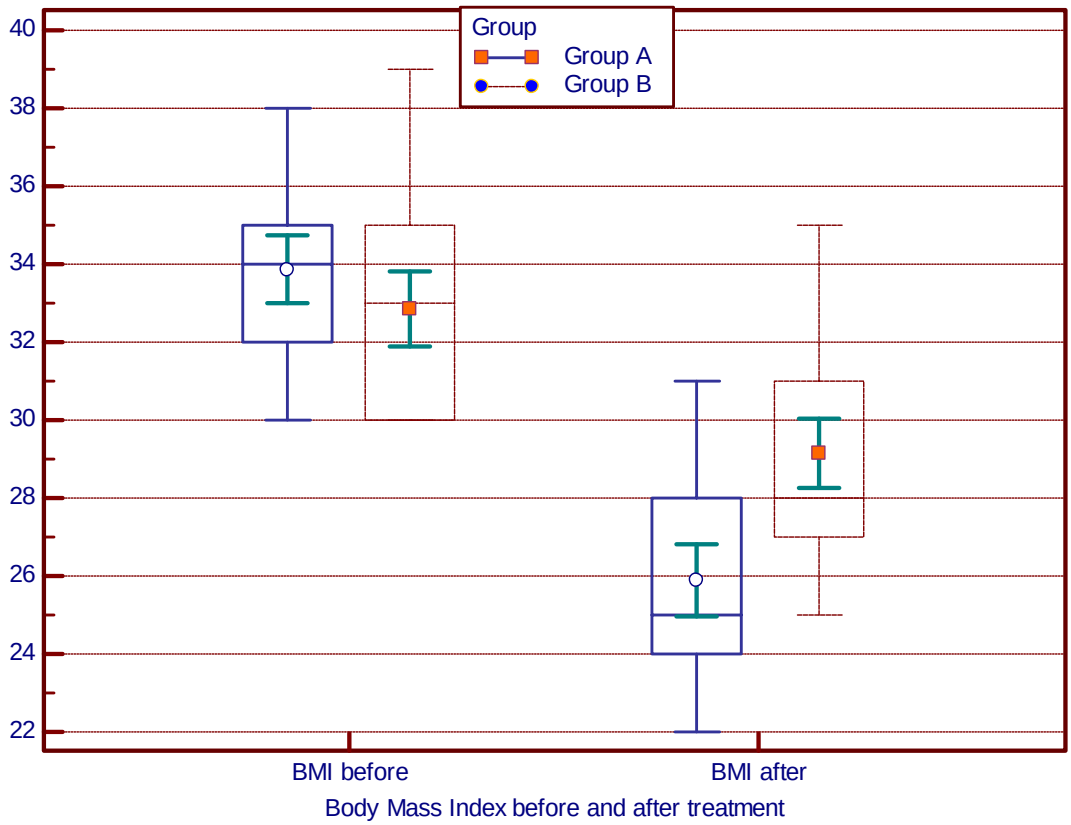

Figure 1.11-Box and whisker diagram depicting the comparison of body mass index at baseline and post intervention between patients of experimental group (group A) and control group (group B).

Table 1.12: Assessment of Medoroga Among Patients Between Baseline and Post Treatment Stages In Group A.

Medoroga Parameter	Group A (Experimental)					
	Stage	Score Mean ± SD	Mean Negative Rank	Sum of Ranks	Z-statistic ⊕	LOS
Khudra Shwash	*Pre*	1.93±0.69	13.00	325.00	4.48	p<0.001 #
	Post	0.57±0.68				
Pipasaatiyoga	*Pre*	1.03±0.32	7.00	91.00	3.61	p<0.001 #
	Post	0.60±0.50				
Nidradhikya	*Pre*	2.20±0.55	14.50	406.00	4.75	p<0.001 #
	Post	0.77±0.43				
Daurbalya	*Pre*	1.83±0.65	15.00	435.00	4.98	p<0.001 #
	Post	0.63±0.49				
Sandhi Soola	*Pre*	2.47±0.68	14.50	406.00	4.76	p<0.001 #
	Post	0.77±0.50				

⊕ The difference in groups observed by using Wilcoxon Signed Ranks Test. # The difference based on ranks in group(s) was highly/strongly significant at the 0.001 levels of significance. [Mean Diff-Mean Difference; LOS-Level of Significance]

Table 1.13: Assessment of Medoroga Among Patients Between Baseline and Post Treatment Stages In Group B.

Medoroga Parameter	Group B Control)					
	Stage	Score Mean ± SD	Mean Negative Rank	Sum of Ranks	z-statistic ⊕	LOS
Khudra Shwash	*Pre*	1.90±0.61	14.00	378.00	5.11	p<0.001 #
	Post	0.97±0.49				
Pipasaatiyoga	*Pre*	1.03±0.32	4.00	24.00	1.89	p>0.05 ⊗
	Post	0.87±0.43				
Nidradhikya	*Pre*	2.00±0.59	3.50	21.00	2.33	p<0.02 *
	Post	1.77±0.57				
Daurbalya	*Pre*	1.57±0.77	14.50	406.00	4.77	p<0.001 #
	Post	0.20±0.41				
Sandhi Soola	*Pre*	2.20±0.66	14.00	378.00	4.87	p<0.001 #
	Post	1.13±0.63				

The difference in groups observed by using Wilcoxon Signed Ranks Test. ⊗ The difference based on ranks in group(s) was not significant at the 0.05 level of significance. * The difference based on ranks in group(s) was significant at the 0.02 level of significance. # The difference based on ranks in group(s) was highly/strongly significant at the 0.002 and 0.001 levels of significance. [Mean Diff-Mean Difference; LOS-Level of Significance]

Table 1.14: Comparison In Grading of Signs and Symptoms of Medoroga Between Group A. and Group B. At Pre Intervention.

Medoroga Parameter	Pre (Baseline) treatment					
	Group	Score Mean ± SD	Mean Rank	Sum of Ranks	Z-statistic ⊕	LOS
Khudra Shwash	*Gr A*	1.93±0.69	30.53	916.00	0.02	p>0.05 ⊗
	Gr B	1.90±0.61	30.47	914.00		
Pipasaatiyoga	*Gr A*	1.03±0.32	30.50	915.00	1.00	p>0.05 ⊗
	Gr B	1.03±0.32	30.50	915.00		
Nidradhikya	*Gr A*	2.20±0.55	33.00	990.00	1.33	p>0.05 ⊗
	Gr B	2.00±0.59	28.00	840.00		
Daurbalya	*Gr A*	1.83±0.65	33.65	1009.50	1.56	p>0.05 ⊗
	Gr B	1.57±0.77	27.35	820.50		
Sandhi Soola	*Gr A*	2.47±0.68	33.87	1016.00	1.64	p>0.05 ⊗
	Gr B	2.20±0.66	27.13	814.00		

Table 1.15: Comparison In Grading of Signs and Symptoms of Medoroga Between Group A. and Group B. At Post Intervention.

Medoroga Parameter	Post treatment					
	Group	Score Mean ± SD	Mean Rank	Sum of Ranks	Z-statistic ⊕	LOS
Khudra Shwash	*Gr A*	0.57±0.68	25.10	753.00	2.71	p<0.001 #
	Gr B	0.97±0.49	35.90	1077.00		
Pipasaatiyoga	*Gr A*	0.60±0.50	26.70	801.00	2.12	p<0.05 *
	Gr B	0.87±0.43	34.30	1029.00		
Nidradhikya	*Gr A*	0.77±0.43	18.68	560.50	5.73	p<0.001 #
	Gr B	1.77±0.57	42.32	1269.50		
Daurbalya	*Gr A*	0.63±0.49	37.00	1110.00	3.38	p<0.001 #
	Gr B	0.20±0.41	24.00	720.00		
Sandhi Soola	*Gr A*	0.77±0.50	26.00	780.00	2.36	p<0.02 *
	Gr B	1.13±0.63	35.00	1050.00		

EFFECT OF THERAPY

TABLE 1.16: Assessment and Comparison In Improvement of Signs & Symptoms In Group A and Group B.

Signs and Symptoms of Medorga	Sum of observed score							
	Group A (Experimental)				Group B (Control)			
	Pre	Post	Diff	% of Relief	Pre	Post	Diff	% of Relief
Kshudra-Shwasa	58	17	41	68.33%	57	29	28	46.67%
Pipasa-atiyoga	31	18	13	21.67%	31	26	5	8.33%
Nidradhikaya	66	23	43	71.67%	60	53	7	11.67%
Daurbalya	55	19	36	60.00%	47	6	41	68.33%
Shandi-Shoola	74	23	51	85.00%	66	34	32	53.33%
Average Score	56.80	20.0	36.80	61.33%	52.20	29.60	22.60	37.67%

Table 1.16 highlights the assessment and comparison of improvement of signs and symptoms of Medoroga such as Kshudra Shwasa, Pipasa-atiyoga, Nidradhikya, Daurbalya and Sandhi shoola among patients of group A and group B.

The percentage of relief among patients of group A and group B was evaluated using differences in sum of grades before and after treatment in order to determine the effect of therapy (Honey). Comparison in percentage of relief of all studied symptom indicated that relief among patients of group A found to be more than patients of group B.

Investigation revealed that patients of group A (experimental group) had experienced better relief (61.33%) after intervention of trial drug Honey as compared to relief (37.67%) among patients of group B (control group) received placebo (Luke warm water).

Among patients of group A, the relief in symptoms of Sandhi shola (85.00%) found to be higher than Nidradhikaya (71.67%), Kshudra-Shwasa (68.33%) and Daurablaya (60.00%). However, least relief observed in symptoms of Pipasa-atiyoga (21.67%) among patients of group A.

Henceforth, comparison in outcomes of study indicated the effectiveness of drug trial Honey among patients suffered from Medoroga.

CONCLUSION

The work entitled **"*AYURVEDIC* CONCEPT OF *MEDOROGA* W. S. R. TO OBESITY "**.** *It draws out following conclusions*.

On the basis of concept

1. Medoroga is a psycho-somatic disorder caused due to mandagni and vitiation of Kaledak kapha.
2. In modern era, high consumption of junk and oily foods along with anxiety and depression are main causes of Medoroga**.**
3. Medoroga is a tridoshaja vyadhi with predominance of Kapha dosha.
4. Kshudra-Shwasa, Pipasatiyoga, Nidradhikaya, Daurblaya and Sandhi-Shoola are inevitable manifestations of Medoroga.
5. Acharya Charaka has mentioned Aharvidhividhana, the dietetic rules and codes of conduct for every season. Now-a-days people do not follow the rules of diet intake Regimen mentioned in Ritucharya. This has invited increased incidence of Medoroga.
6. "Sedentary life style is one of the main reasons for this disease.
7. Agnimandya, Ama and Srotodusti is the prime factors in the manifestation of the Medoroga.
8. Medoroga if becomes chronic and the vitiation of the doshas leads to other conditions like Kshudra-Shwasa, Pipasatiyoga, Nidradhikaya, Sandhi-Shoola. etc.
9. Ischemic heart disease, CA Oesophagus, CA pancreas, Colon, CA breast etc
10. Of the Medoroga states that severity of agnidushti.
11. Pathyapthya plays a definite role in the management of Medoroga.
12. Drug s having properties like Deepana, pachana, and lekhan are useful in the treatment of Medoroga.

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