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A comparative study of Ayurvedic medicine and modern medicine treatment in *Medoroga* (overweight)

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Abstract--*Medoroga* (obesity) is one of the most important risk factors for the development of hyperlipidemia, atherosclerosis, cardiovascular disease, renal disease etc. and the leading cause of death. To compare the efficacy as Ayurvedic medicine and Modern medicine treatment modality on BMI, BMR, Waist Circumference & lipid profile in Overweight (*Medoroga*). Newly diagnosed *Medoroga* (Overweight) patients will be selected and divided into two groups. In both groups, dietary, physical therapy, and behavioral therapy will be recommended. According to modern medicine, it is the treatment protocol of overweight. Ayurveda also included *pathyaahar*, *vyayam* and *satvavjay* in the treatment principle of *Medoroga*. In group A, *Jayantyadi churna* is given in a dose of 3grams twice a day before meal for 180 days and as no medicine is advised in modern medicine for overweight, placebo will be given for 180 days. Follow up were performed on 0, 30th, 60th, 90th, 120th, 150th and 180th. Our hypothesis is that Group A can be found to be more effective than

Group B due to *Jayantyadi churna* which acts on *Medodhatvagni*, BMI, BMR, waist circumference and lipid profile. It will be drawn from the findings of BMI, BMR, Waist circumference and Lipid Profile in both groups. Ethics approval was obtained from MGACHRC/IEC/February-2021/192 Dt.16/02/2021. The conclusion will be based on the results and will be published in a peer-reviewed journal

Keywords---*Jayantyadi churna, Medoroga, Overweight, Modern treatment.*

Introduction

Obesity is defined as abnormal or excessive body fat accumulation. It is an important health problem associated with a number of illnesses which leads to a variety of life-threatening illnesses and results in a reduction in a person's lifespan¹⁻².

According to the India-3 National Family Health Survey (NFHS-3), 13% of women (15-49 years) and 9% of men (15-49 years) were overweight or obese by 2005-06. The prevalence of overweight has doubled in last two decades in India.³ It has become epidemic in urban areas and is increasing at an alarming rate in rural areas. Prevalence of overweight was higher in urban areas than in rural areas and decreased in people involved in agriculture or handicrafts⁴.

Rationale of study

In this era of modernization, Overweight is a curse to the human beings. In spite of advancement in treatment of overweight, its prevalence is increasing significantly. According to modern medicine, Diet, physical activities and behaviour therapy are the first line treatment modalities in the management of overweight.^{5,6,7,8,9}

In Ayurveda, the correlated condition to overweight is (*Medoroga*) which is mentioned in *Madhavidan*¹⁰ and *Sharangdhara*¹¹ Samhitas. The fundamental approach of Ayurveda to treat *Medoroga* is to correct *dhatvagnimandya* leading to proper formation of *dhatu*.¹² *Guru, Apatarpanahar* (diet therapy), *Vyayama* (exercise) and *Shleshma-medohar medication*. To keep this in mind, the current study is designed to evaluate the effectiveness of Ayurved and modern medicine treatments in the management of *Medoroga* (Obesity).¹³⁻¹⁴

Aim – Objectives

Aim

To compare the efficacy as Ayurvedic medicine and Modern medicine treatment modality in Overweight (*Medoroga*).

Objectives**Primary Objectives:**

- To study the efficacy of Ayurvedic medicine treatment on BMI, BMR & Waist Circumference in Overweight.
- To study the efficacy of Modern medicine treatment on BMI, BMR & Waist Circumference in Overweight.
- To compare the effectiveness of both treatment modalities in BMI, BMR, and Waist Circumference at Overweight
- To compare the effectiveness of both treatment modalities on Lipid profile

Secondary objectives

To study the correlation of *prakruti* in the pathogenesis of *Medoroga* (Overweight).

Case Definition

A patient having BMI in the range of 25-29.

Research Question

Whether Ayurvedic medicine treatment is more effective than Modern medicine treatment in *Medoroga* (Overweight)?

Hypothesis

Null hypothesis (H0): Ayurvedic medicine and Modern medicine treatment has similar effect in the management of *Medoroga* (Overweight).

Alternate hypothesis (H1): Ayurvedic medicine treatment modality is more effective than Modern medicine treatment in the management of *Medoroga* (Overweight).

Materials and Methods**Study Type:**

Trial Design: A randomized double blind placebo controlled trial.

Sampling methods: Simple random technique by lottery method.

Blinding: Double blinding

Place of Study: This study will be conducted in Mahatma Gandhi Ayurved Hospital, Research Center DMIMS (DU), Salod (H), Wardha.

Material

1. Selection of patients – Patients will be selected as per inclusion criteria from O.P.D. and I.P.D. of Kayachikitsa of Mahatma Gandhi Ayurved Hospital, Research Center DMIMS (DU), Salod (H), Wardha.
2. Selection of Drug: All raw drugs required to manufacture the drug will be collected from local market and it will be authenticated by experts of Dravyaguna. Medicine will be prepared in the Rasashala of Mahatma Gandhi Ayurved Hospital, Research Center DMIMS (DU), Salod (H), Wardha.

3. Number of groups

- Group-A: (Ayurvedic medicine treatment) Diet therapy, Physical exercise, behavior therapy and *Jayantyadi Churna* (n=38).
- Group-B: (Modern medicine treatment) Diet therapy, Physical exercise, behavior therapy and Placebo (n=38).

Table 1
Interventional table

Group	A	B
Sample size	38	38
Drug	<i>Jayantyadi Churna</i>	Placebo
Route of administration	Oral	Oral
Doses	3 cap. (1 gram each) twice a day	3 cap. (1 gram each) twice a day
Aushadhi sevan Kaal	<i>Pragbhakta</i> (Two Hour Before Meals)	<i>Pragbhakta</i> (Two Hour Before Meals)
Anupan	<i>Koshnajal</i> (Luke Warm Water)	<i>Koshnajal</i> (Luke Warm Water)
Total Duration	180 days	180 days

Diet Therapy¹⁵

The patients of both groups will be advised the daily calories as per their working pattern

- For female patient 1,000 to 1,200 kcal/day,
- For male patient 1,200 to 1,600 kcal/day.
(The diet plan will be advised by Dietician)

Physical Activity¹⁶

30 minutes daily walk for 6 months as per individual capacity.

Behavior therapy¹⁷

Counseling regarding diet and physical activity will be done by Dietician and principal investigator on every visit.

Inclusion criteria

- Age group from 20-50 years, irrespective of sex, with similar socioeconomic status.
- BMI in the range of 25-29 (Weight in Kg / Height in m²).

Exclusion criteria:

- Patients of Coronary Heart disease, Atherosclerosis, Myocardial infarction, renal failure, Diabetes mellitus, Hypothyroidism
- Pregnancy and lactating women.
- Psychiatric illness.
- Patients with a history of anorexia nervosa or bulimia nervosa.

- Patients on steroids and *Guggul* therapy.
- Smokers.

Withdrawal criteria:

- Patient unwilling to continue the treatment.
- If any types of adverse effect seen

Investigation:

- Fasting blood sugar
- Lipid profile

Sample size:

$$N > \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 (\sigma_1^2 + \sigma_2^2 / r)}{(\mu_1 - \mu_2)^2}$$

Alpha (α) 0.05

Beta (β) 0.2

Mean in group 1 (μ_1) 1.768

Standard deviation in group 1 (σ_1) 1.722

Mean in group 2 (μ_2) 0.653

Standard deviation in group 2 (σ_2) **1.346**

Ratio (Group 2 / Group 1) 1

Minimum sample size needed for group 1: 31

Minimum sample size needed for group 2: 31

38 patients needed in each group in the study. (Considering 20% as dropout)

N= 31

= **38** patients needed in each group in the study. (Including 20% as dropout)

Expected outcome

Expected difference of BMI of 0.5kg/m² will be considered as significant.

Assessment Criteria

- **BMI:** Weight will be measured in fasting state with same clothes on each visit.

Improvement

I₁ (< 25 %)

I₂ (25-50 %)

I₃ (50-75 %)

I₄ (>75 %)

Reduction in BMI (in kg/m²)

- < 1

- 1-2

- 2-3

- >3

- **Waist circumference**

Follow up were performed on 0, 30th, 60th, 90th, 120th, 150th and 180th day.

Statistical Analysis: Data will be analyzed on the basis of appropriate statistics paired and unpaired test and ANOVA by using SPSS software.

Time duration till follow up: The treatment duration will be of 180 days.

Time schedule of enrolment, intervention:

Table 2
Gantt chart

	Q1	Q2	Q3	Q4	Q5	Q6
Medicine Preparation						
Patients Enrolment						
Data Collection						
Data Analysis						
Thesis Writing						
Thesis submission						

Recruitment: patients will be randomly recruited in group A & B by simple random sampling method.

Method: Literature review search, plan of work, Blueprint in the flow chart, preparation of medicine, data collection, treatment and its effect, will be observe which route of administration is best and statistical analysis.

Schematic Diagram Of Study Methodology

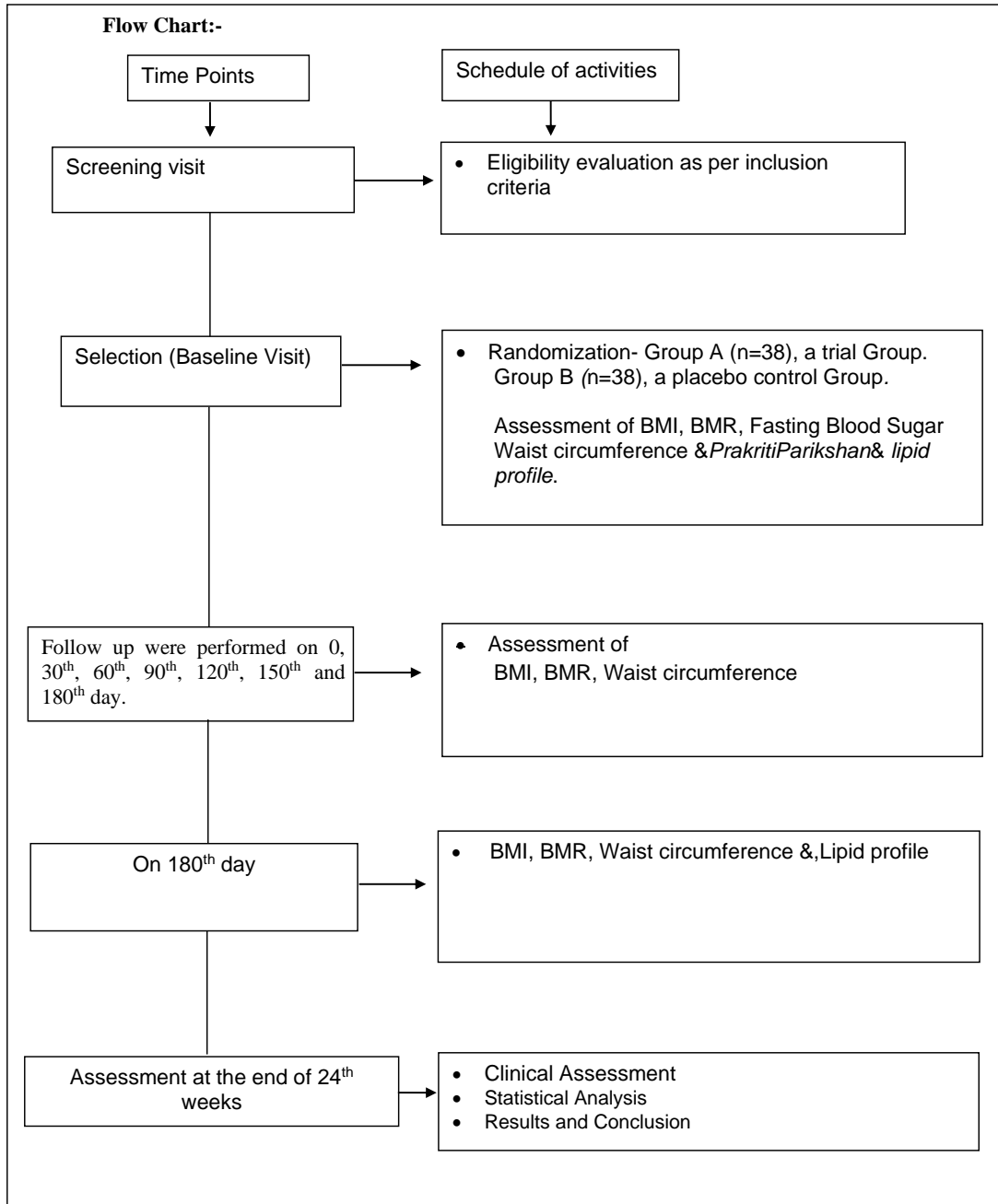


Figure 1. Schematic Diagram of Study Methodology

Data collection methods – Randomized sampling.

Objective parameters

- Body mass Index (kg/m²)
- Waist Circumference
- Lipid Profile

Investigations Routine

Lipid Profile (To rule out Hyperlipidemia and dislipidemia)

Data Management

Data coding will be done by principal investigator.

Statistical Method

Statistical analysis will be done using chi-square tests and unpaired 't' student tests.

Ethics and dissemination

This study was approved by the Institutional Ethics Committee of **MGACHRC/IEC/February-2021/192 Dt.16/02/2021**, all participants will ask to read and sign the informed consent. The study results will be disseminated to study participants and published in peer-reviewed publications.

Consent OR Assent

Before starting the intervention patient will be given detail information regarding intervention, preparation of medicine and drug doses accordingly in his own language then the written consent will be taken from patients before starting the study. During study confidentiality will be maintain.

Dissemination policy

The data will be spreading in the form of paper publication and Monograph. Authorship eligibility guidelines and any intended use of professional writers.

Informed consent materials

The subjects will be given all consent materials in the form of hard copy, and other related documents.

Discussion

Jatharagni(digestive fire) plays a major role in proper nutrition of *Dhatu*. The etiopathogenic factor of *Medovridhhi* is hypofunctioning of *Jatharagni* results in production of *Ama* (undigested toxic substances) This condition may enhance the *medodushti* leading to *medoroga*. Protocol reviewed ^{18, 19}

Various *Acharya's* like *Charak*, *Sushruta*, *Vagbhata* described numerous herbal combinations to correct *Jatharagni* & *medo dhatvagni*. *Jayantyadi churna* is selected for this study. It contains following medicine²⁰. It may helpful to reduce BMI in *Medoroga* due to their following properties.

Haritki (*TerminaliaChebula*) – In previous study, it showed effect on adiponectin and leptineventually work as lipolytic ²¹.

Agnimantha corrects agni and reduce BMI because of its *dipana*, *pachana*, *medohara* and *kaphahara* properties..²²

Amalki is *Kaphahar* & *medohar* in one study; it showed significant reduction in triglycerides, LDL total cholesterol and VLDL along with significant increases in HDL levels..²³

Kutaj possesses *Katu*, *Tikta* and *kashaya rasa* along with *Laghu* and *Ruksha* gunas reduces vitiation of *Kapha* and *Medodushti*. It removes *Amavisha* by its *Deepaniya*, *Pachaniya*, and *Vishaghna* properties..²⁴ A number of studies from modern medicine²⁵⁻²⁸ and Ayurveda on obesity and dyslipidemia²⁹⁻³⁰ were reported.

Conclusion

On the basis of data analysis, observation and results, conclusion will be drawn.

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