"RANDOMISED CONTROLLED CLINIAL TRIAL OF ADD ON EFFECT OF KHADIRADI CHURNA ALONG WITH METFORMIN IN THE MANAGEMENT OF PRAMEHA(NIDDM)"

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ABSTRACT:

The present study was conducted on 72 patients of in the OPD of Kayachikitsa at concerned hospital. Patients were taken in trial group & control group. Special attention was given to age, sex, occupation, religion, etiology, symptoms and diagnosis of disease.

72 patients were selected according to inclusion & exclusion criteria"s, from the hospital attached to our college, 36 patients were registered in control group and 36 were registered in trial group by randomization. In control group, patients were asked to take Metformin. In trial group, patients were given Khadiradi churna with anupana of Koshna Jal and along with Metformin. Duration of treatment was 90 days. Records were kept during the course of treatment on 1st, 30th, 60th, 90th day and at the end of treatment. Any side-effects or adverse effects were looked for

Diabetes is becoming more common day by day. As a silent killer, it quietly attacks the youthful generation, increasing the fiscal burden on both people and government. Ayurveda has greater application and importance.

To prevent the disease in the first stage and avoid further progress.

To treat the diabetic condition through medications, nutrition, and exercise;

Ayurveda is an ancient Indian system of medicine that has been continuously practiced for over 5000 years. Prevention and promotion of health as well as the treatment of disease are the vital aspects that have

been discussed in all the Ayurvedic Samhitas. Prameha (Madhumeha) can be correlated with Diabetes mellitus in modern science. Which is included in Ashtamahagada[1] by Acharya Charaka, Sushruta, and Vaghbata

Its clinical study deals with the need and plan of study in detail, aims and objects, materials and methods, criteria for selection and exclusion criteria, sampling method, treatment schedule, assessment criteria, observations in tabular form along with the statistical analysis of results obtained etc.

The conclusions drawn based on the study have been presented

Keywords : Prameha, Diabetes Mellitus, Khadiradi Churna,

INTRODUCTION

Diabetes is a disease known from the dawn of civilization. Sedentary life style, lack of exercise, faulty food habits and improper medication and urbanization precipitate the disease. Diabetes mellitus is a syndrome with disordered metabolism and inappropriate hyperglycemia due to either a deficiency of insulin secretion or to a combination of insulin resistance and inadequate insulin secretion to compensate for the resistance.

Given the burden of type 2 diabetes and its complications, much attention has been given to prevention, beginning with identifying at-risk individuals prior to diagnosis.

Materials and methods

This chapter includes the methodology of the study, study design, gradations of the subjective criteria, objective criteria, assessment criteria, diagnostic criteria, etc.

Authentication and standardization of raw materials used in the preparation of Khadiradi churna was done.

Khadiradi churna was prepared according to guidelines mentioned in Sharangadhara Samhita.

72 patients were selected according to inclusion & exclusion criteria"s, from the hospital attached to our college, 36 patients were registered in control group and 36 were registered in trial group by randomization.

In control group, patients were asked to take Metformin. In trial group, patients were given Khadiradi churna with anupana of Koshna Jal and along with Metformin. Duration of treatment was 90 days. Records were kept during the course of treatment on 1st, 30th, 60th, 90th day and at the end of treatment. Any side-effects or adverse effects were looked for.

METHODOLOGY

METHOD OF SELECTION OF PATIENTS-

Inclusion Criteria

1) Age group in between 35 – 75 years

2) Patient of any gender, religion and socio-economic status.

3) Patient having signs and symptoms of prameha

4) Blood Sugar level (Fasting - 120 to 159 mg/dl) (Post Prandial- 160 to 250 mg/dl)[3]

5) HbA1C- from 6.5-9% [3]

Exclusion Criteria

1. Patients of Sahaja Madhumeha (IDDM/ Type I DM).

2. Patient on oral steroid treatment.

3. Patient with any other known systemic disorder.

4. Pregnant women and lactating mothers.

5. Patient unable to give written informed consent.

Withdrawal Criteria

1. Occurrence of serious adverse events.

2. The investigator felt that the protocol had been violated / patient had become in-cooperative.

3. Those who are not willing to continue the trial / to follow the assessment schedule.

4. Rescue medicine will be given in case of ADR present according to sign and symptom.

Treatment details

Group	Group A: Trial group	Group B: Control group
No. of patients	36	36
Treatment	Khadiradi Churna +Metformin	Metformin
Matra	4 gm + 500mg	500mg
Route	Oral	Oral
Kal	Before meal	Before meal
Anupan	Koshna Jal	Jal
Kalpana	Churna	Tablet
Duration	90 days	90 days
Follow up	30th , 60th , 90th day	30th, 60th , 90th days

Assessment criteria:

After the completion of the treatment, the results will be assessed by adopting the following criteria:

Grading of assessment of parameters:[1], [7]

1)   **PRABHUTAMUTRATA (POLYURIA)**

Frequency of urine	Grading
3 - 6 times per day, rarely at night	0
6 - 9 times per day, 0 – 2 times per night	1
9 - 12 times per day, 2 – 4 times per night	2
More than 12 times per day, more than 4 times per night	3

2) Pipasa (Polydypsia)

Pipasa (polydipsia)	Grading
Feeling of thirst 7–9 times/24 hours, either/or Intake of water 5–7 times / 24 hours with quantity1.5 – 2.0 litre / 24 hours	0
Feeling of thirst 9-11times/24hours, either/or Intake of water 7-9 times/24 hours with quantity2.0 - 2.50 litre/24 hours	1
Feeling of thirst 11–13 times/24 hours, either/or Intake of water 9–11times/24 hours with quantity 2.50 -3.00 litre/24 hours	2
Feeling of thirst>13times/24hours, either/or Intake of water >11 times/24 hours with quantity>3.00 litre/24hours	3

3) Abhyavaharana Shakti (Hunger)

Abhyavaharana Shakti (Hunger)	Grading
Person taking food in excessive quantity twice in a day	0
Person taking food in normal quantity twice in a day	1
Person taking food in moderate quantity twice in a day	2
Person taking food in less quantity twice in a day	3
Person taking food in less quantity once in a day	4
Person not at all taking food	5

4) Jarana Shakti (Digestion)

According to presence of Jirna Ahara Lakshana: Udgarashuddhi, Utsaha, Yathochitta, Malotsarga, Laghuta, Kshudha, Trishna

Jarana Shakti (Digestion)	Gradings
Presence of all symptoms within 4 hours	0
Presence of all symptoms after 4 hours	1
Presence of four or more symptoms after 4 hours	2
Presence of three or more symptoms after 5 hours	3
Presence of two or more symptoms after 6 hours	4
Anyone symptom presence after 6 hours	5

5) Kara-Pada-Tala-Daha/Supti(Neuropathy)

Kara-Pada-Tala-Daha/Supti (Neuropathy)	Grading
No Daha	0
Kara-pada-tala-daha/Supti not continuous	1
Kara-pada-tala-daha/Supti continuous but not severe	2
Kara-pada-tala-daha/Supti continuous and severe	3

6) Avila Mutrata(Turbidity)

Avila Mutrata (Turbidity)	Gradings
Crystal clear fluid	0
Faintly cloudy or smoky (turbidity barely visible)	1
Turbidity clearly present but newsprint easily read through test tube	2
Newsprint not easily read through test tube	3
Newsprint cannot be seen through test tube	4

7) Mutramadhurya(Glycosuria)

Mutramadhurya (Glycosuria)	Gradings
Absence of Glucose in urine	0
<0.5% Glucose in urine	1
0.5 - 1.0% of Glucose in urine	2
1.0 – 2.0% of Glucose in urine	3
>2.0% Glucose in urine	4

8) Swedadhikya(Perspiration)

Swedadhikya (Perspiration)	Grading
Sweating after heavy work and fast movement or in hot Weather	0
Profuse sweating after moderate work and movement	1
Sweating after little work and movement (stepping ladder,etc.)	2
Profuse sweating after little work and movement	3
Sweating even at rest or in cold weather	4

9) Daurbalya (Weakness)

Daurbalya (Weakness)	Grading
Can do routine exercise/work	0
Can do moderate exercise with hesistancy	1
Can do mild exercise only, with difficulty	2
Cannot do mild exercise too	3

10) Alasya/Utsahahani (General Debility)

Alasya/Utsahahani (General Debility)	Grading
No Alasya (doing satisfactory work with proper vigor andin time)	0
Doing satisfactory work/late initiation, likes to stand in comparison to walk	1
Doing unsatisfactory work/late initiation, likes to sit in comparison to stand	2
Doing little work very slow, like to lie down in comparison to sit.	3
Don't want to do work/no initiation, like to sleep in comparison to lie down	4

11) Shrama Swasa (Dyspnoea)

Shrama Swasa (Dyspnoea)	Grading
Dyspnoea after heavy work and walking	0
Dyspnoea after moderate work and walking	1
Dyspnoea after mild work	2
Dyspnoea even at resting condition	3

12) Nidradhikya (Sleep)

Nidradhikya (Sleep)	Grading
Normal sleep, 6 – 8 hours/24 hours	0
Sleep up to 8 hours/24 hours with Angagaurava	1
Sleep up to 8 hours/24 hours with Angagaurava and Jrimbha	2
Sleep up to 10 hours/24 hours with Tandra	3
Sleep up to >10 hours/24 hours with Tandra & Klama	4

Investigation:-

Date	0th day	30th day	60th day	90th day
BSL (F)				
BSL (PP)				
HbA1C				
Blood Urea				
Serum creatinine				
Urine routine				

DRUG FORMULATION DETAILS

For the present study, Khadiradi Churna used for the management of prameha. The details of the formulation and method of preparation are as follows

Methods of standardization -

A. Raw material standardization: as per Pharmacopeial (API) guidelines: Khadiradi Churna content will be standardize

RAW MATERIAL :-

Khadir   (Acacia Catechu)   Twak

Sharkara   (Secer)   -

Haridra   (Curcuma longa)   Kand

Daruharidra   (Berbaris aristata)   Kand

Musta   (Cyperus Rotundus)   Kand

Anupan –   Koshna Jal

OVERALL IMPROVEMENT IN GROUP A & B-

Overall Effect	Group A		Group B	
	N	%	N	%
Marked Improvement	32	88.89%	23	63.89%
Moderate Improvement	4	11.11%	13	36.11%
Mild Improvement	0	0.00%	0	0.00%
No Improvement	0	0.00%	0	0.00%
TOTAL	36	100.00%	36	100.00%
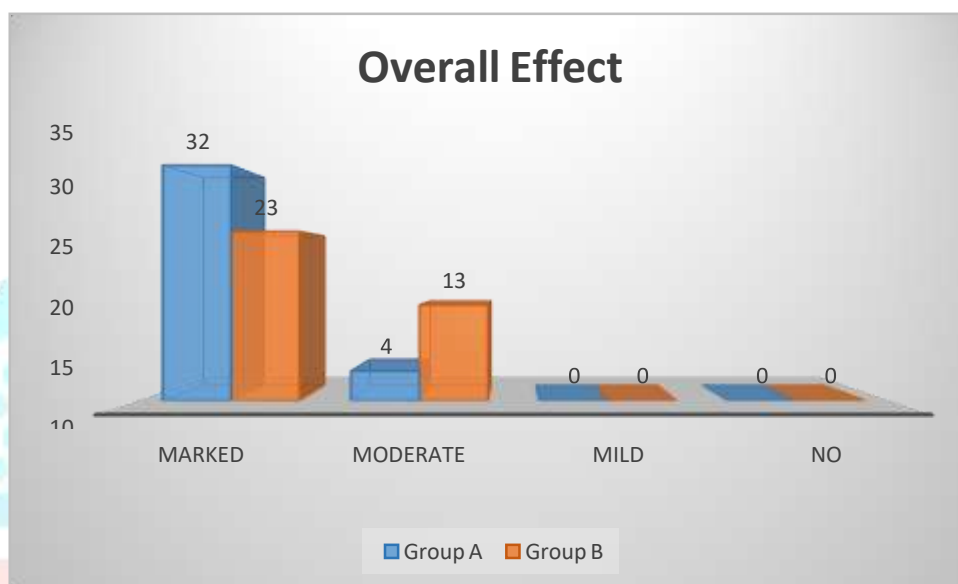
The overall effect data illustrates the outcomes observed in both Group A and Group B. In Group A, 88.89% of participants experienced marked improvement, while 11.11% showed moderate improvement. Conversely, in Group B, a lower proportion of participants, 63.89%, experienced marked improvement, with 36.11% showing moderate improvement. Notably, no participants in either group reported mild or no improvement. This data suggests a more substantial overall improvement in health or condition among participants in Group A compared to those in Group B, highlighting potential disparities in treatment effectiveness or response between the two groups.

OVERALL EFFECT OF DRUG IN GROUP A & B

	Group A	Group B
Overall % Effect	90.16	81.96
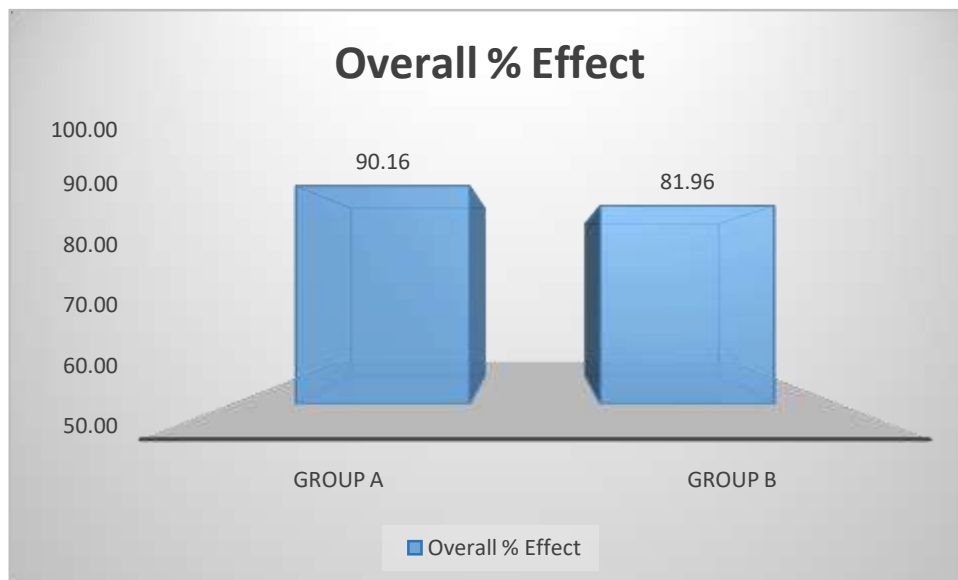
The provided data presents the overall percentage effect observed in both Group A and Group B. In Group A, the overall percentage effect stands at 90.16%, while in Group B, it is slightly lower at 81.96%. This data suggests that, on average, interventions or treatments implemented in Group A have a slightly higher efficacy compared to those inGroup B. These percentages indicate the overall effectiveness of the interventions in achieving the desired outcomes within each group.

DISCUSSION

The following headings were made to facilitate discussion:

A. Discussion on disease aspect

B. Discussion on demographic data

C. Discussion on observations in the present study.

1. Effect of therapy on quantitative parameters.

2. Effect of therapy on qualitative parameters.

D. Discussion on probable mode of action of drug

A. Discussion on disease aspect:

Detailed explanation   of disease   Pameha and Diabetes Mellitus wasdiscussed earlier.

B. Discussion on demographic data:

1. Age/Vaya - Maximum numbers of patients i.e. 31 in this study were from the age group

of 51-60 years followed by 20 of patients from the age group of 61-

70 years. 9 patients from the age group of 41-50 years and 9 patients from the age group of more than 70years. It was observed that the individuals were more affected by diabetes in age group of 51 -60 years.

2. Gender

In the study, 47.22%patients were females and 52.78% patients weremale, who were the majority.

3. Religion–

In this study77.78% patients belonged to Hindu community and 22.22% were from Muslim community. This may be due to the demographic situation of this region.

4. Prakruti

This study shows that maximum number of patients having Kaphavata prakruti (30.56%) and vataapha prakruti (25.00%). This

distribution points towards the predominance of Kapha Dosha in Samprapti of Prameha and also the Kapha vata avarodhjanya swarup of the Apathyanimittaja Madhumeha.

5. Type of work

In manifestation of diabetes type of work plays an important role. In the present study 45.3% patients doing sedentary work, 27.78% patients were having labour work, 26.39% patients were having active work. In patients with sedentary work, diabetes was seen majorly due to lack of exercise and occupational stress.

6. Family history of DM

In the present study, 55.56% patients were having family history of diabetes and 44.44% patients were having no family history of diabetes. It shows that if family has history of diabetes, then you are at higher risk of getting diabetes.

7. Diet

In this study, 69.44% patients were having mixed diet (Vegetarian and non-vegetarian) and 30.56% patients were having vegetarian diet. This may be due to traditional diet pattern.

8. Ahara shakti-

In the present study, maximum no. of patients were having awar aharashakti i.e. 44.44% and 41.67% patients were having madhyam aharashakti. It indicates that Jathara agnimandya was there & dhatwagni and bhutagni were hampered widely which can lead to aama formation. It gives relation to the Samprapti of Prameha.

9. Socioeconomic status-

In the study majority of patients were from the lower class (59.72%) & middle class (40.2%)it may be due to the locality of the hospital.

B) Discussion on observations in the present study

1. Effect of therapy on quantitative parameters.

❖ Within the group (Student t test)

a) Considering the p value <0.05, there was significant difference between the treatment scores in trial group and control group for the factors Blood sugar fasting, postprandial, HbA1c, and BUL, Sr.Creatinine, UrineSugar. Hence, null hypothesis was rejected.

b) In the present study, proportion of the patients considering quantitative parameters in the control group had got relief in fasting blood sugar level by 12.20%, post prandial blood sugar level by 10.18%, HbA1c by 3.79%, BUL by 6.49% and Sr. Creatinine by 100% relif

Whereas after the add on effect of Khadiradi churna along with Metformin patients in trial group have got relief in fasting blood sugar level by 14.68%, post prandial blood sugar level by 11.81%, HbA1c by 15.97%, BUL by 20.32% andSr.Creatinine 100% relif Hence, null hypothesis can be rejected.

2. **Effect of therapy on Qualitative parameters**

a) Considering the p value <0.05, there was significant differencebetween control group and trial group for the symptomsPrabhutamutrata, Pipasa, Abhyavahrana Shakti, Jaran Shakti,Karapad-Tala Daha/Supti,Daurbalya, Shramaswasa, Nidradhikya) whereasconsidering P value >0.05, there was no significance for symptoms (Avialmutrata, Mutramadhurya, Swedadhikya, Alasya) By Mann Whitney U test. Hence, null hypothesis was rejected.

b) In the control group, there was relief in symptoms Prabhutmutra by 80.49%, Pipasa 88%, Abhyahrana Shakti by 76.19%, JaranShakti by 84.21%,Karapad-Tala Daha/Supti by 50.00% Avilamutrata by100%,Mutramadhurya by 100%,Swedadhikya by 62.50%, Daurbalya by 75.00%, Alasyaby100%,Shramswasaby 66.67%,Nidradhikya by 100%

c) Whereas after the add on effect of Khadiradi Churna along with Metformin, in

the trial group the patients had got relief inPrabhutmutra by88.68%,Pipasa97%,Abhyahrana Shakti by 83.93%,JaranShakti by 92.86%,Karapad-Tala Daha/Supti by 92.31% Avilamutrata by100%,Mutramadhurya by 100%,Swedadhikya by 71.43%,Daurbalya by 82.61%,Alasya by100%,Shramswasa by 72.73%,Nidradhikya by 100

C) Discussion on the mode of action of treatment

Khadiradi Churna was mention in the Harita Samhita in the management of Prameha Prakarana Chikitsa.It includes Khadira, Sharkara, Daruharidra, Haridra, Musta Churna. These all drugs possess Kashyaya, Tikta, Katu Vipaka,Ushna Virya . These all drugs acts on Kapha , Vata dosha which helps to decreases excessive Madhura Rasa , Kapha Dosha from the body .

The key aspect of Prameha Samprati was Bahu-Drava shleshma and the meda, mansa, and dushti. As a result Khadiradi Churna plays an important part in the regression of samprapti since its components contain Ruksha-Laghu Guna and Ushna Virya. It helps in the pachana.,lekhana of the Meda Dhatu. Metformin is well known drug used for the management of Diabetes Mellitus which comes under oral hypoglycaemic agents.

CONCLUSION

The present study was conducted on the review of Prameha from the ayurvedic literature as well as from modern aspect There is evidence that add on effect of Khadiradi churna with anupana Koshna Jal and along with metformin and is effective in management of Prameha (NIDDM).

The study found no adverse effects of Khadiradi churna along with Metformin in the management of Prameha (NIDDM).

Prameha (Type 2 DM) primarily affects people overall %effect (90.16%) in the current study. The quantitative measures such as fasting blood sugar, postprandial blood sugar, HbA1C, and BUL, Sr.Creatinine, Urine Routine showed a high significant rate statistically using Khadiradi churna along with Metformin in the management of Prameha (NIDDM).

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