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Research Article

A CLINICAL STUDY ON THE EFFECTIVENESS OF *AVARTHAKI CHOORNA* IN *PRAMEHA* W.S.R. TO DIABETES MELLITUS

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ABSTRACT

With a prevalence rate of 424.9 million globally and 72.9 million in India, the disease Diabetes Mellitus affects a large population in our society. The prospective understanding of this disease from etiology to complication is when understood, retrospective analysis of the same in Ayurvedic perspective is characterized by *Prabhoota* and *Avila Mootrata* due to the accumulation of excess *Medas* in *Basti* leading to *Prameha*. The same can be understood by the theory of Osmtic diuresis in Diabetes Mellitus. The drug *Virapreeta Lajjalu* explained in *Rajanighantu* is used in the study, which has direct reference for *Prameha* and has not been evaluated yet. **Aim:** To assess the effectiveness of *Avarthakichoorna* in the management of *Prameha* w.s.r to Diabetes Mellitus and to evaluate the quality of life. **Materials and Methods:** A single blind clinical study where 21 patients were given the *Avarthaki Choorna* for a period of 14 days. **Observation and Results:** The statistical analysis of study revealed that the intervention was beneficial in *Prabhoota Mootrata* with a p value <0.001 and for *Avila Mootrata* it was clinically observed even though the p value 0.008. The blood glucose levels FBS and PPBS was also improved with a p value <0.001 for both. The life style assessment did also seem to be giving positive results with a p value <0.001. **Conclusion:** The drug *Avarthaki Choorna* was found to be effective in treating the Diabetes Mellitus or *Prameha* in terms of subjective and objective parameters. It also improves the lifestyle of a person.

KEYWORDS: *Prameha*, Diabetes mellitus, *Avartaki Choorna*.

INTRODUCTION

Inquisitiveness inside the research scholar is the backbone all sciences. When an apple fell down from an apple tree on Sir Isaac Newton's head that made him to think about 'gravity'. Whereas the invention of 'Zero' by *Aryabhata* is believed to be an explanation of a *Sanskrit* concept used the ancient books. Inquisitiveness, by which they had to find the reason later declared as their inventions.

Diabetes Mellitus is a metabolic disorder of multiple aetiology characterized by sustained hyperglycaemia with disturbances of carbohydrate, fat, and protein homeostasis resulting from defects in insulin secretion, insulin resistance, or both. The survey results of 2017 on global level shows 425 million people are affected by Diabetes. In India, more than 62 million are affected and 1 million die due to Diabetes every year[1,2]. The anti-diabetic medication used in India including tablets and insulin includes 140 in number, still the prevalence of Diabetes is increasing each year[3]. When pathogenesis of *Prameha* and Diabetes Mellitus are compared with theory of osmotic diuresis, formation of glucose in urine can be compared with the *Prabhoota mootrata* noted in *Prameha*. It is because of excessive vitiation of *Kapha* and *Medas* in which *Kleda* or *Atidrava Avasta* of the same in excess can be noted. The treatment modalities in Ayurveda include 30 single drugs, *Shamana Oushadhi*in combinations, *Shodhana Chikitsa* and *Anubhuta Yoga*. Even though the disease prevalence or its complication are being addressed in both sciences, the prevalence rate is still high. This is the inquisitiveness that initiated this study about a financially viable solution for this global health care scenario.

MATERIAL AND METHODS

Aims and Objectives

1. To assess the effectiveness of *Avarthaki Choorna* in the management of *Prameha* w.s.r to Diabetes mellitus.
2. To evaluate the changes in the quality of life before intervention and at the end of follow up period.

Design of the study

A single blind clinical study with pre-test and post-test design where in a minimum 20 patients suffering from *Prameha* (Diabetes mellitus) will be selected randomly, irrespective of gender or religion

Setting: More than 20 Patients diagnosed with *Prameha* were taken for the study, from the OPD and IPD of S.D.M Ayurveda Hospital, Udupi. Drugs required for the study were procured from Vaidyaratnam Oushadhasala, Kerala.

Eligibility Criteria

Inclusion Criteria

- Diagnosed cases of Diabetes Mellitus within 5 years of onset.
- Patients of either gender will be taken.
- Both fresh & treated patients of age group between 30-70 years.
- Informed written consent will be obtained from the included patients.

Exclusion Criteria

- Patients of age group <30 and >70 years.
- Any Systemic disorder other than Diabetes Mellitus which will interfere with present treatment.
- Diabetic patients associated with severe complications such as Diabetic Nephropathy, Diabetic Retinopathy, Ischemic Heart Disease, Gestational Diabetes etc.

Diagnostic Criteria

Subjective Criteria

Patients presenting with *Lakshanas* of *Prameha* such as *Prabhuta Mootrata*, *Avila Mootrata*, *Kshudha*, *Dourbalya*, *Karapada Daha/Suptata*.

Objective criteria

Table 1: Objective Criteria[2]

Fasting Blood Sugar	≥126mg/dl- ≤220mg/dl
Postprandial serum glucose level	≥140mg/dl- ≤280mg/dl
Hba1c	≥7%
Elevated urine glucose levels	≥8 mmol/L

Intervention

Drug: *Avarthaki Choorna*

Dose: 1 *Karsha* (12 gm should be given before lunch and dinner with warm water)

All patients selected for the study will be subjected to *Avarthaki Choorna* 12 gm BD for 14 days.

Follow up during treatment: Starting from the day of the treatment follow up will be done after 14days and at the end of the study (on the 28th day).

Total duration of the study- 42 days

While intervention patients were asked to stop the anti-diabetic medication they were taking before and any other medications interfering with this drug combination was also asked to stop by analyzing the composition of the drug.

Assessment Criteria

Subjective Criteria

Prabhoota Mootrata

Quantity of urine (in litre)

0- 1.5 to 2.00
1- 2.00 to 2.50
2- 2.50 to 3.00
3- 3.00 onwards

Frequency of Urine

0 - 3 to 6 times per day, rarely at night
1- 6 to 9 times per day, 0-2 Times per night
2– 9 to 12 times Per Day, 2-4 times per Night
3- More than 12 times per day, more than 4 times per night

Avila Mootrata

It will be measured using turbidometry analysis method

***Ati Bhubhuksha* (appetite)**

0- normal limits
1- main meals, light breakfast 2-3 / day
2- 2 main meals, light breakfast 2-5 / day
3- 2 main meals, light breakfast > 5 / day

***Ati Trishna* (polydipsia)**

0- intake of water 5-7 times /24hours with quantity 1.5-2.5 litters /24 hours
1- intake of water 7-9 times /24hours with quantity 2.5-3.0 litters /24 hours
2- intake of water 9-11 times /24hours with quantity 3.0-3.5 litters /24 hours
3- intake of water >11 times /24hours with quantity >3.5 litters /24 hours

***Daurbalya* (debility)**

0- Can do routine exercise/ work
1- Can do moderate exercise with difficulty
2- Can do mild exercise only, with difficulty
3- Cant to mild exercise

***Sithilangatha* (fatigue)**

0- No fatigue
1- Fatigue on doing work
2- Fatigue on moderate work
3- Fatigue on doing mild work.

***Kara-Pada-Tala-Daha/ Supti* (neuropathy)**

0- No *Daha*
1- *Kara Pada Tala Daha* is not continuous
2- *Kara Pada Tala Daha* continuous but not severe
3- *Kara Pada Tala Daha* continuous and sever

Mukhatalusosha

0- No *Mukhatalusosha*

1- Occasionally dryness of oral cavity and disappear just after taking water.

2- Persistence of dryness of mouth & subsides after taking more quantity of water.

3- Continuous dryness of mouth & does not subsides even after taking more quantity of water.

Body weight

Before treatment

After treatment

Quality of Life Assessment[4]

1. ***Ruk Upasamanam*– Alleviation Of Symptoms**
   Grade 1– 0 to 25% (1-3 Symptoms Relieved)
   Grade 2- 26-50% (5-6 Symptoms Relieved)
   Grade 3- 51-75 % (7-9 Symptoms Relieved)
   Grade 4- 76-100% (10-13 Symptoms Relieved)
2. ***Swara*– Voice**
   Grade 1- Altered Voice
   Grade 2- Partially Altered Voice
   Grade 3- Clear Voice
3. ***Varna*– Complexion**
   Grade 1 - Dull Look
   Grade 2- Reduced Complexion
   Grade 3- Healthy
4. ***Sariropacaya*– Nourishment**
   Grade 1 -Malnourished
   Grade 2- Moderately Nourished
   Grade3- Well Nourished
5. ***Balavriddhi*– Strength**
   Grade 1 – Unable to do daily activity
   Grade 2- Able to do daily activity with difficulty
   Grade 3- Able to do all the daily activities
6. ***Abhyavaharyabhilasha*- Desire For Food With Appetite**
   Grade 1 – No Desire for food with reduced appetite
   Grade 2- Desire for food which is liked with moderate appetite
   Grade 3- Desire for all types of food with good appetite
7. ***Ruchi Aharakale* -Taste For Food At Meal Time**
   Grade 1- Tastelessness
   Grade 2- Reduced Taste
   Grade 3- Normal Taste
8. ***Samyak Jaranam*– Digestion At Proper Time**
   Grade 1- All *Lakshanas* of digestion
   Grade 2- Few *Lakshanas* of digestion
   Grade 3- *Jeerna Ahara Lakshana*
9. ***Nidrakale Yatha Kalam*- Sleep At Proper Time**
   Grade 1- Loss of sleep
   Grade 2 –Delay in attaining sleep
   Grade 3- Good sleep
10. ***Swapna* – Dreams of Morbidity**
    Grade 1- On all days
    Grade 2 – On few days
    Grade3- No dreams of morbidity
11. ***Sukhena Ca Pratibodhanam*– Feeling Fresh After Waking Up**
    Grade 1 –None of the days
    Grade 2- On few days
    Grade 3 –On all days
12. ***Vata Mootra Purisha Retasam Mukti* – Proper Evacuation of Flatus, Urine, Faeces and Semen**
    Grade 1- Any 1 is proper
    Grade 2- Any 2 are proper
    Grade 3- Any 3 are proper
    Grade 4- All 4 are in proper
13. ***Mano Budhi Indriya Avyapath***
    Grade 1- All 3 are impaired
    Grade 2- Any 2 are impaired
    Grade 3- Any 1 is impaired
    Grade 4- Normal

The subjective criteria were assessed before the intervention, after 14 days and after 28 days. The life style assessment was also done along with the subjective criteria assessment on 1st, 14th and 28th day.

Objective Criteria

The blood parameters FBS & PPBS checked during the first visit, as a parameter for inclusion criteria for the disease. It was repeated again after 14 days of drug intervention to check the effect of medicine and on the 28th day after intervention to check the extended effect of drug after the intervention stopped. Other blood parameter Hba1c was done to exclude the uncontrolled Diabetes Mellitus and considered as diagnostic criteria also.

The Urine parameters FUS and PPUS were checked on 1st, 14th and 28th day.

Statistical Assessment

The *Prabhoota Mootrata, Avila Mootrata, Kshudha, Daurbalya* and *Karapada Daha* in terms of subjective factors and FBS, PPBS, FUS, PPUS in terms of objective criteria was assessed before and after the intervention. The life style assessment was done before and after the study to analyze the effect of drug on other aspects as well. The results were statistically analyzed by using Sigma Stat Statistics

Software Version 3.5 The sample size was <30, so numerical data was analyzed using Paired t test and ordinal data was analyzed using Wilcoxon Signed Rank Test.

OBSERVATION

Among the total number of patients, maximum number of patients was found in 56-65 were 10 comprising 48% (Table No.2). The total number of males was 52% and females were 48% (Table No.3). Maximum number of patients in terms of religion was Hindu (81%) (Table No.4) None of the patient was illiterate, 57% had received school education and 43% received college education (Table No.5). 90% of the patients were married and only 2 patients in the age group of 31-35 were unmarried (Table No.6). The study revealed people belonging to middle class were more affected by diabetes, which is of 76% (Table No.7). People who belong to *Anupa Desha* were 90% and only 10% of patients were living in *Jangala Desha* (Table No.8). Among these patients 55% were not on medication (Table No.9). Diet is an important factor leading to metabolic syndromes including Diabetes. The patients who were taking mixed diet pattern met with Diabetes than the Vegetarian diet (Table No.10) Habits found in most of the patients were alcohol (24%) or a mixed habit of alcohol and cigarette smoking (19%). Whereas 43% didn't report of any habits (Table No.11). Walking (38%) and Sitting (38%) were the postures maintained by the patient, in the terms nature of work (Table No.12). The rest or *Vishrama* they received on a daily basis was inadequate in 43% of the patients (Table No.13). The bowel habits observed in 52% of patients were normal and 29% had constipated bowel habits (Table No.14). 53% of patients never had any problem with micturition, 33% had burning sensation and 14% had retention feeling (Table No.15). *Samagani* was noted in38% of the patients out of 21 patients (Table No.16). *Mrudu Koshta* patients were about 43% which is less than half of the patient (Table No.17). When Body Mass Index (BMI) was measured in 21 patients, 43 % had normal BMI, 43% of patients were obese and only 5% were found obese (Table No.18). *Vatapita Prakruti* was found in 8 patients, that is about 8 patients. *Prakruti* assessment revealed that most of the patients are *Vatakapha* (43%) (Table No. 19). *Madhyama Samhanana* was found in 81% of patients. 76% of patients were of *Avara Satwa* and 85% of patients had *Madhyama Vyayama Shakti* (Table No. 20). These observations helps to get a clear cut idea about the correlation between the specific causative factors and origin of Diabetes Mellitus or *Prameha* in the patients came for the study.

Table 2: Distribution of Patients According to Age

Age group	No of patients	%
30-35	2	9%
36-40	0	0
41-45	2	9%
46-50	2	10%
51-55	2	10%
56-60	5	24%
61-65	5	24%
66-70	3	14%

Table 3: Distribution of Patients According to Sex

Sex	No of Patients	%
Male	11	52%
Female	10	48%

Table 4: Distribution of Patients According to the Religion

Religion	No of patients	%
Hindu	17	81%
Muslim	3	14%
Christian	1	5%
Other	0	0

Table 5: Distribution of Patients According to the Educational Status

Education	No of patients	%
College	12	57%
School	9	43%
Illiterate	0	0

Table 6: Distribution of Patients According to the Marital Status

Marital status	No of patients	%
Unmarried	2	10%
Married	19	90%
Divorce	0	0
Widow	0	0

Table 7: Distribution of Patients According to the Socio-Economic Status

Status	No of patients	%
Lower	4	19%
Middle	16	78%
Upper	1	5%

Table 8: Distribution of Patients According to the *Desha*

Desha	No of Patients	%
Sadharanam	0	0
Jangala	2	10%
Anupa	19	90%

Table 9: Distribution of Patients According to Anti-Diabetic Medication History

Medication	No of patients	%
With medication	11	55%
Without medication	9	45%

Table 10: Distribution of Patients According to the Dietary Habits

Diet	No of patients	%
Veg	3	14%
Mixed	18	86%

Table 11: Distribution of Patients According to the Addictions

Habits	No of patients	%
Alcohol	7	24%
Cigarette	3	9%
Tobacco	2	5%
Mixed	4	19%
Nil	9	43%

Table 12: Distribution of Patients According to the Nature of Work

Posture	No of patients	%
Sitting	8	38%
Standing	5	24%
Walking	8	38%

Table 13: Distribution of Patients According to *Vishrama*

Vishrama	No of patients	%
Adequate	6	28%
Inadequate	9	43%
Excessive	6	29%

Table 14: Distribution of Patients According to the Bowel Habits

Bowel	No of patients	%
Regular	11	52%
Constipated	6	29%
Irregular	4	19%

Table 15: Distribution of Patients According to the Micturition

Micturition	No of patients	%
Regular	11	53%
Scanty	0	0
Incontinence	0	0
Retention feeling	3	14%
Burning sensation	7	33%

Table 16: Distribution of Patients According to the *Agni*

Agni	No of Patients	%
Vishama	3	14%
Teekshna	5	24%
Manda	5	24%
Sama	8	38%

Table 17: Distribution of patients according to the *Koshta*

Koshta	No of patients	%
Krura	5	24%
Madhyama	7	33%
Mrudu	9	43%

Table 18: Distribution of Patient According to BMI

BMI	No of patient	%
<18	0	0
18.5-24.9	11	52%
25-29.9	9	43%
>30	1	5%

Table 19: Distribution of Patients According to *Prakruti*

Prakruti	No of patients	%
Vata	0	0
Pita	1	5%
Kapha	3	14%
Vatapita	8	38%
Vatakapha	7	33%
Pitakapha	2	10%

Table 20: Distribution of Patients According to their *Samhanana*

Samhanana	No. of Patients	%
Avara	2	10%
Madhyama	17	81%
Pravara	2	9%

RESULTS

Effect on the Subjective Parameters

It was seen that *Prabhoota Mootrata* was reduced by 63.33%, *Avila Mootrata* reduced by 72.70%, *Kshudha Adhikya* reduced by 49.94%, *Dourbalya* reduced by 23.6%, *Karapada Daha* or *Suptata* reduced by 33.33%. (Table No.21)

Effect on Objective Parameters

While assessing blood glucose levels FBS was reduced by 22.05% and PPBS was reduced by 26.53%. Both the results were statistically significant. The urine glucose levels when analyzed, FUS was reduced by 41.80% and PPUS was reduced by 37.38%. (Table No.22)

Effect of Treatment on Lifestyle

The life style was assessed by 13 different aspects and results were analyzed. An overall 7.37% of improvement was noted in the lifestyle (Table No.23)

Table 21: Effect of Treatment on Subjective Criteria

Parameters	Bt Mean	At Mean	Diff Bt-at	% of Relief	Wilcoxon signed rank test			
					Sd	Sem	Z Value	P Value
Prabhoota mootrata	1.429	0.524	0.905	63.33	Bt-0.507	Bt -0.111	4.146	<0.001
					At.0.512	At- 0.112		
Avila mootratha	0.524	0.143	0.381	72.70	Bt - 0.680	Bt-0.148	2.828	P=0.008
					At- 0.359	At-0.0782		
Kshudha	0.857	0.429	0.428	49.94	Bt - 0.854	Bt- 0.186	3.000	P=0.004
					At- 0.507	At- 0.111		
Dourbalya	0.810	0.619	0.191	23.6	Bt - 0.602	Bt- 0.131	2.000	P=0.125
					At-0.590	At– 0.129		
Karapada Daha or ***Suptata***	0.429	0.286	0.146	33.33	Bt – 0.507	Bt- 0.111	1.732	P=0.250
					At- 0.463	At- 0.101		

Table 22: Effect of Treatment on Objective Criteria

Parameters	Bt Mean	At Mean	Diff Bt-at	% of Relief	Sd	Sem	Paired t test	
							T value	P value
FBS	167.143	130.286	36.857	22.05	Bt-30.745	Bt- 6.709	6.490	P<0.001
					At- 17.811	At- 3.887		
PPBS	225.429	165.619	59.810	26.53	Bt- 28.638	Bt- 6.429	12.966	P<0.001
					At- 23.455	At- 5.118		
FUS	0.256	0.149	1.107	41.8	Bt - 0.400	Bt-0.0873	12.966	P=0.015
					At- 0.246	At-0.0573		
PPUS	0.329	0.205	0.123	37.38	Bt-0.445	Bt-0.0670	2.955	P=0.008
					At-0.302	At-0.0659		

Table 23: Effect of Treatment on Life Style Improvement

Time	Mean	±SD	±SE	Difference In Mean	% Improvement	Wilcoxon Signed Rank Test	
						Z value	P value
BT	2.631	0.664	0.418	0.194	7.37%	7.000	P<0.001
AT	2.825	0.638	0.0402				

DISCUSSION

The *Nidana* such as excessive sweet food, heavy food, unctuous food, reduced exercise and so on will alleviate the *Kapha Pradhana Tridosha*. When the *Panchabhoota* constituency and *Guna* are same in *Kapha* and *Meda*, its correlation of function can also be made. By understanding this mutual relationships, it is possible to infer the relative changes as well. Thus *Medas* is also increased or vitiated when *Kapha* is vitiated due to *Prameha Nidana* and that is the reason for affliction of its *Srotomula, Vrikka*. When *Vrikka* is afflicted in this condition it will lead to altered normal function, which is the storage and passage of *Mootra.* The fluid imbalance thus resulted will be balanced by the tendency of the body to Oral intake of water, characterized by *Pipasa adhikya* Increased quantity of *Medas* and *Kapha* in the *Srotomoola* of *Medas*, i.e., *Vrikka,* thus lead to osmotic diuresis. Due to these phenomena the re-absorption mechanism of urine will be altered, as flow of particles will happen from an osmolality of lower to higher concentration. In *Vrikka* due to the higher concentration of *Medo Dhatu,* there will be more quantity of urine and more secretion thus happens. Along with that the turbidity may appear due to the associated *Dosha* and *Dushya* vitiation. Another major factor analysed in a *Prameha Rogi* is *Madhuryata* of the body and attraction of the insects to the body. The *Rasanendriya Prariksha* explains the same context of attraction of ants towards the urine of *Prameha Rogi*. The blood glucose and urine glucose levels of a diabetic person will be elevated, thus the concept of *Madhuryata* can be substantiated with these parameters. When a clinical evaluation of these symptoms are analysed, it can be observed that

Kaphaja, Pittaja and *Vataja Prameha* are different stages of the disease progression. The concept of losing O*ja* is another major *Samprapti* explained in *Prameha*, the same *Oja* which is of *Rakta Varna* is lost it will lead to *Sotha* of whole body. This can be compared to the Diabetic Nephropathy in which urine output will be reduced due to the vitiated function of *Basti*. *Ojas* if *Sweta Varna* when reduces, it will lead to reduction of *Satva* of a person. The same can be noted as depression in Diabetes cases. Another major clinical classification found in *Prameha* is *Sthoola* and *Krusha* type, which has been widely discussed. This classification is based on the physique of a person*. Sthoola Prameh*i includes people with good physique and *Krusha Pramehi* includes people with reduced body strength. Another method of understanding of this concept can be based upon a kid with low birth weight developing Diabetes in later life and obese person developing Diabetes due to insulin resistance. The treatment explained for *Sthoola Pramehi* is *Karshana* and for *Krusha Pramehi* its *Brumhana.* In general the treatment for *Prameha* is explained as *Shodhana, Shamana* and *Rasayana. Shodhana* can be selected according to the *Bala* of the person, *Shamana* can be given in all cases and *Rasayana* is considered to another line of *Shamana* therapy with more loading dosage of medicine for a period of time. Milk is also considered to be *Rasayana* in terms of loading dosage and duration (*Nitya Rasayana)*[5-7]*.*

The *Shodhana* therapy mainly includes *Vamana* for the *Prameharogi* with *Kapha* predominance, *Virechana* for *Pitta* predominance and *Basti* for *Vata* predominance. *Virechana* modifies the fluid dynamics of the mucosal cell and cause fluid absorption to the gut. It also helps to correct early stages of insulin resistance and decreased insulin secretion; it helps to remove the cellular waste and thus improves the functionality of the cells also. It helps in the *Samprapti Vighatana* of *Lakshana* by keeping away more liquid from *Basti* and correcting the *Prabhoota mootrata. Vamana* reduces the amount of *Kapha* as well as *Medas* and helps to minimize the insulin resistance. In terms of blood glucose levels both *Vamana* and *Virechana* may reduce the levels. But when the patient is not having proper *Bala*, these *Shodhana* cannot be administered, so the option remaining is *Shamana*. *Shamana* is the therapeutically used procedure for administration of oral medications. The concept of oral medication is for the *Vighatana* of the *Samprapti*[7].

Avarthaki Choorna is a single drug, which underwent *Bhavana* in *Samanga*. In-Vivo and In-Vitro studies have proven that *Avarthaki* has got anti-diabetic, anti-lipidemic, anti-inflammatory, anti-leishmanial effect and hepato protective actions. The *Samanga* has been used to improve the action of *Avarthaki*, even though it has anti-diabetic effect. Thus in whole it can be inferred that, this drug combination is acting on the *Vyadhi Samprapti* than the *Lakshana Samprapti*. But controlling the *Vyadhi Samprapti* will eventually control the *Lakshana*. Insulin resistance is seemed in inflammatory conditions and anti-inflammatory is action of *Avarthaki* can be taken in the same note, in which Diabetes can be controlled by minimizing the inflammation and reducing the insulin resistance *Prameha* is caused by vitiation of *Kapha* and *Medas*, which will be controlled by the *Kashaya Rasa* And *Tikta Rasa*. The anti-inflammatory, anthelmintic and bactericidal properties effect of *Tiktarasa* and *Amadosha* effect of *Kashayarasa* will work on the cellular level to reduce the insulin resistance. The *Prabhoota* and *Avila Mootrata* due to excessive accumulation of *Dushya* in *Vrikka* will be controlled by the *Grahi* property of *Tikta* and *Kashayarasa*. The effect of medicine on improving the life style in terms of *Varna* and *Swara* can also be found in the treatment effect. Thus this particular combination has the action on *Prameha* (in terms of *Prabhoota* and *Avila Mootrata*), Diabetes Mellitus (FBS, PPBS, FUS, PPUS) and improving the life style of a person. The drug also has the capability to act against the associated complaints of Diabetes Mellitus, such as UTI, Incontinence due to neuropathy and so on. Bitter or bitter stomachic's increases functional quality of the digestive organs, thus it improves *Jataragni* and *Dhatwagni*. The drug that possess the *Kashaya- Tikta Rasa* has *Kapha- Pitta Shamaka* property in general[8,9].

Most of the patients had V*ata-Pita or Vata-Kapha Prakruti* and 90% were living in *Anupa Desha*. The other common pattern observed is mixed diet pattern and sitting nature of work along with reduced exercise. During the course of study, total patients screened were 82 and among that 25 patients were taken for study. There were 4 drop outs in the study. The major changes in the parameters were found in the age group of 30-55 years age, they had marked reduction in the parameters after the intervention of medication than other groups. That shows the importance of *Sharira Bala* during the course of treatment. Assessment of life style also showed marked improvement after the intervention of 14 days, the parameter *Varna and Swara* mentioned in the life style assessment didn't show much improvement after the intervention of medicine. The prolonged effect of medicine is analyzed by taking the parametric results on 28th day and it shows only mild to moderate effect in patients

after stopping the medicine. This can be inferred as the chances of prolonged dependency towards medication. Only 1 patient complained of mild weakness after consuming the medicine and rest of the patients didn't have any such complaints during the course of study due to medicines.

CONCLUSION

The study was conducted to analyse the effect of *Avarthaki choorna* in the subjective and objective parameters of *Prameha*, which can be understood in the terms of *Samprapti Vighatana Chikitsa*. By the clinical study conducted in 21 patients, it was found that the drug is effective in the *Vighatana* of *Vyadhisamprapti* and *Lakshanasamprapti*. Thus giving a statistically significant result in the cardinal signs of *Prameha* and Diabetes Mellitus. The assessment of FBS, PPBS, FUS and PPUS also showed statistically significant results after the intervention of *Avarthakichoorna*. In addition to the Anti-diabetic effect, the drug also helps in the improvement of life style of a person by 7.37% which is not seemed while using other Anti-diabetic medications.

REFERENCES

1. Aschner P, Assal JP, Bennet PH. Definition diagnosis and classification of Diabetes mellitus and its complications. Diagnosis and classification of Diabetes mellitus part 1.Chapter 2.p.6.
2. Robert S, Justin L.Mercks Mannual.19th edition. New Jersey: Merck Sharp and Dome Corp; 2011. p.866.
3. Valliathan MS. Life style diseases and Ayurveda. Vajra 2016. January13-14; Thrissur: Vaidyaratnam Books; 2017.p.11.
4. Singh R.H, Vaidya Yadavji Trikamji, Ayurveda dipitatika, Charaka Samhitha, Vimana Sthana, 9/89, Chaukhambha surbharati prakshan, Varanasi 2016, p.263.
5. Susruta Samhitha Ayurveda Tattvasanapidika by Vaidya Ambikadutta Shastri, Chaukhamba Sanskrit publication, Varanasi. 2012, Chikitsa Sthana 11/6, p.363.
6. Singh R.H, Vaidya Yadavji Trikamji, Ayurveda dipitatika, Charaka Samhitha, Chikitsa Sthana, 6/19-24, Chaukhambha surbharati prakshan, Varanasi 2016, p.443.
7. Hari Sadasiva Sastri Editor. Ashtanga Hridaya, Varanasi: Chaukahamba Sanskrit Sansthan; 2010. p.678.
8. Kalavani A, Umamaheswari A. Anti-hyperglycaemic and antioxidant properties of Cassia auriculata leaves and flowers on alloxan induced Diabetic rats. Pharmacologyonline, 2014.
9. Manisha, Suresh kumar. Biophytum Sensitivum DC: A Review. International Journal Of Pharmaceutical Sciences And Research. 2018; 9(1): 27-36.

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