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Assessment of *Ojodusti* in *Madhumeh* vis-a-vis Diabetes mellitus

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ABSTRACT

Disease like diabetes which emerged as 7th biggest cause of death in India & is likely to double in next decade, diabetes mellitus is also known as *ojo-meha* and till date no study has been done to evaluate the status of *ojodusti* in *madhumeha*[1]. The present study has been selected with an assumption that, as the diabetes progresses, the quality and quantity of the *Oja* disturbs in the form of *vyapad*, *vishransh* & *kshaya* that makes patient prone for many symptoms & diseases ranging from mild, moderate to severe. Main purpose of the study is to assess the status of the *Oja* in diabetic patient with the help of sign & symptoms given in Ayurvedic classics[2]. By taking into consideration of the above facts, in this study 40 patients of *Madhumeha* were screened with the help of self prepared questionnaire to assess the status of *Ojas* in diabetic patients.

KEYWORDS

Madhumeha, *Oja*, *Ojodusti*, *Diabetes mellitus*, *Immunity*

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INTRODUCTION

Ayurvedic texts suggest to diagnose the disease first and then to think over the treatment.

"*Rogamadou pariksheta tatoanantaramoushadham*" (*Charaka sutrasthana 20/20*)[3]

In fact, where there is loss of *oja* due to negligence every type of *Prameha* can be converted into *Madhumeha*[4]. It is to be remark that Oja has been noted as one of the pathogenic materials (*Dūsya*) in *Prameha* generally and specially in *Madhumeha*[5]. Explaining the pathogenesis of *Madhumeha Ācārya Caraka* says that *Ojas* is sweet in nature but *Vāta* associated with astringency (*Kasāyatva*) carries into urinary bladder and manifest *Madhumeha*[6]. Thus the *Oja* play an essential role in diabetes from beginning to end. In *Prameha* all aspects of *Oja* are affected. It checks the normal development, reduces immunity, which further causes appearance of *pidikās* and other complications and finally leads to death. All these effects are related to *Oja*[7].

From the perspective of *Ayurveda Siddhanta Oja* is a unique concept in *Ayurveda*. *Dosha Dhatu Mala*, are functional basis of human body. It is one among those factors on which existence of life depends. Among all functional entities *Ojas* is unique in its sense that its increase above the normal limit is also beneficial for human life[8]. *Dosha Dhatu Malas* when in equilibrium are beneficial for human life. Increase as well as decrease both qualitatively and quantitatively in *Dosha Dhatu Malas* is cause for disease. In this context *Ojas* differs from these and stands above of these, as it increase above equilibrium is also helpful to body. Though being quoted as *Sapta dhatu saara* it has been quoted as separate entity[9]. Involvement of *Ojas* in certain diseases is also widely quoted. In spite of this much vast literature available on *Ojas*, in this era of evidence based medicine comprehensive description of concept of *Ojas* is yet not achieved.

AIMS AND OBJECTIVES

1)   Assessment of the *ojodusti* on the basis of glycosylated haemoglobin (HbA1c)in diabetic patient.

2)   Assessment of the *ojodusti* on the basis of urine examination (R/M) of diabetic patient.

STUDY PROFILES

Type of study design: Clinical observational study.

A)   Selection of cases

Cases of *Madhumeha* were selected after thorough history taking and ancillary investigation from OPDs and IPDs of

Acharya Mukundilal Dwivedi Chikitsalaya of Rishikul Campus Uttarakhand Ayurved University, Haridwar. Patients irrespective of gender and socio-economic status were selected on the basis of following criteria:

B)   Inclusion criteria-

1-Patient between the age group 16- 60yr was selected.

2-Patient having HbA1c value > 6.5

3-Patient having symptoms of *Madhumeha* as describe in ayurvedic classics.

C)   Exclusion criteria-

1.   Patient below 16yr and above 60yr of age.

2.   Patient suffering from any disease other than diabetes mellitus.

3.   Patients of HIV, Hepatitis.

4.   Patients with evidence of malignancy and other severe systemic diseases any other drug that may have an influence on the outcome of the study were excluded for the clinical study.

1.   Demographic Profile:

Following points were noted under demographic profile viz. Name, Age, Gender, Religion, Education, Occupation, Marital Status, Habitat (Rural/Urban) etc.

2.   Clinical Profile:

All cases to be registered were subjected for their detailed examination after history taking as per following points

-Chief complaints with duration

1.   History of present illness

2.   History of Past illness

3.   Treatment history

4.   Family history of relevance of any chronic disease

5.   Personal history - appetite, diet, sleep pattern, micturition habit, bowel habit and addiction.

a)   Physical Examination:

General condition, Pulse rate, Blood pressure, height, weight, body mass index (BMI), Pallor, Icterus, Cyanosis, Clubbing, Lymph nodes, Thyroid, JVP, Tongue and oedema were recorded.

b)   Systemic Examination:

Central Nervous System, Cardio Vascular System, Respiratory System, Gastrointestinal System, Loco-motor examinations and Urogenital System, were thoroughly examined at the time of registration of patient.

DIAGNOSTIC CRITERIA:

Blood Examination:

•   Routine blood was examined for total leukocyte count, differential leucocytes count and haemoglobin percentage and erythrocyte sedimentation rate to exclude any systemic disease.

•   Blood urea and serum creatinine were done to assess the renal status.

BLOOD GLUCOSE

1. Glycosylated haemoglobin (HbA1C)

Urine Examination:

Various characters of urine have been described in *Āyurvedic* texts in the context of *Prameha*. The characters which are described are mainly colour and few other characters have been described like appearance/transparency, odour, presence of froth, crystal particles, blood cells and sperms etc.

The following parameters of urine were examined.

1- Physical examinations for colour, appearance and sediments, Reaction and Specific gravity.

2- Different Chemical parameters and Microscopic examination.

Assessment criteria:

Assessment of clinical study was done based on subjective and objective parameters. Self scoring of symptoms of Ojo vikruti was done and self prepared scale was used for assessment[10]. For reliability & consistency of the questionnaire, Software 'Statistical Package for Social Sciences' Version 16 (SPSS Inc. Chicago, IL, USA) was used.

4. GRADING OF LAKSHAN AND ASSESSMENT CRITERIA:

ASSESSMENT *OF OJO VISHRAMS*

- *Sandhivishlesh* (looseness in joints)
- *Gataranam sadnam* (Body pain)
- *Kriyasannirodh* (Hindrance in movements)

ASSESSMENT OF *OJO VYAPADA*

- Stabdhata guru gatrta (Stiffness & heaviness in body)
- Vaat sofa (Edema caused by vaat)
- Galaani (Fatigue)
- Tandra (Drowsiness)
- Nidra (Excessive sleep)

ASSESSMENT OF *OJOKSHAYA*

- Murcha (Fainting)
- Pralaap (Irrelevant talking)
- Durabalya (Weakness)
- Mamsa kshaya (Muscle wasting / emaciation)
- Rukshta (Dryness)
- Bibheti (constantly feeling under some threat, inferiority and negativity complex)
- Dhyayati (constant worrying without any significant reason)
- Vyatitendriya (Discomfort in sense organs)
- Dushchaya (loss of luster, complexion)
- Durmana (lack of confidence, self esteem)
- Rukshta (dry or rough skin and body)
- Kshamta (blackish discoloration of body)

OBSERVATION

Observation and result has been presented in two parts:-

1. Demographic profile of the patients registered for the study.

2. Patients of *Madhumeha* were screened with the help of self prepared questionnaire to assess the status of *Ojas* in diabetic patients.

DEMOGRAPHIC PROFILE

AGE:

Table 1 Percentage distribution of Age in the patients of *Madhumeha* (DM)

Age	No. of cases (n=40)	Percentage (%)
16 – 35	05	12.5%
36- 50	19	47.5%
>50	16	40%
Total	40	100

The above table shows that the maximum cases falls in middle age group 36-50 years i.e.47.5%.

GENDER:

Table 2 Percentage distribution of Gender in case of patients of *Madhumeha* (DM)

Gender	No. of cases (n=40)	Percentage (%)
Male	26	65%
Female	14	35%
Total	40	100

The above table shows that prevalence of the disease is higher in male i.e. 65% and 35% were female.

RELIGION:

Table 3 Percentage distribution disease with Religion:

Religion	No. of cases (n=40)	Percentage (%)
Hindu	38	95%
Muslim	02	05%
Total	40	100

It has been observed that maximum number of patients belongs to Hindu religion i.e. 95% and rest of cases belong to Muslim religion.

OCCUPATION:

Table 4 Percentage distribution of occupation in patients of *Madhumeha*

Occupation	No. of cases (n=40)	Percentage (%)
Business	13	32.5%
Service man	16	40%
Farmer	01	2.5%
House wife	07	17.5%
Uneducated	03	7.5%
Total	40	100

This study reveals that DM was predominantly found in service man and Business group both are 40% and 32.5%.

SOCIOECONOMIC STATUS:

Table 5 Percentage distribution of the disease with Socio-economic Status

Socioeconomic status	No. of cases (n=40)	Percentage (%)
Lower socioeconomic status	11	27.5%

Middle socioeconomic status	29	72.5%
Higher socioeconomic status	0	0%
Total	**40**	**100**

The above table shows that the disease was prevalent in middle and lower economic status i.e. 72.5% cases and 27.5% cases.

Table 6 Percentage distribution of the Disease with BMI

BMI Status	No. of cases (n=40)	Percentage (%)
A	3	7.5%
B	10	25%
C	22	55%
D	5	12.5%
Total	**40**	**100**

Body mass index was also calculated to identify the risk and prevalence and it was found that maximum patients of *Madhumeha* were registered as normal BMI i.e. 55% followed by overweight patients i.e. 25% and 12.5% cases were found underweight.

DIETARY HABIT

Table 7 Percentage distribution of the disease with Dietary habit

Diet	No. of cases (n=40)	Percentage (%)
Vegetarian diet	11	27.5%
Mixed diet	29	72.5%
Total	**40**	**100**

The above table shows that 72.5% of cases had the habit of mixed diet.

FAMILY HISTORY:

Table 8 Distribution of patients according to family history of *Madhumeha*

Family history of DM	No. of Patients (n=40)	Percentage (%)
Positive	19	47.5%
Negative	21	52.5%
Total	**40**	**100**

The above table shows that 47.5% were with positive family history and in 52.5% case were negative family history.

TREATMENT HISTORY

Table 9 Treatment history observed in DM patients.

Treatment	No. of cases (n=40)	Percentage (%)
Oral anti–hyperglycemic	21	52.05%
Ayurvedic Medicine	06	15%
Mix	13	32.5%
Total	**40**	**100**

It was observed that 52.05% patient were on Oral – anti hyperglycemic treatment, 15% on *Ā*yurvedic medicine and 32.5% patient were on both *Ā*yurvedic and allopathic.

Table 10 Specific Gravity of Urine (NORMAL RANGE: 1.010-1.030)-

Specific gravity	No. of cases (n=40)	Percentage (%)
1.010 – 1.030	21	52.5%
> 1.030	19	47.5%
Total	40	100

From above table it was found that out of 40 patient specific gravity of 52.5% patients was found within normal limit where as in case of 47.5% patients it was more than normal limit.

Table 11 Albumin in patients of *Madhumeha*

Albuminuria	No. of cases (n=40)	Percentage (%)
No cloudiness	03	7.5%
Trace (<0.1g/dl)	13	32.5%
Cloudiness without granularity + 1 (0.1g/dl)	13	32.5%
Granular cloudiness +2 (0.1- 0.2g/dl)	11	27.5%
Total	40	100

Out of 40 patients albumin was absent in case of 7.5% patients where as it was present in 92.5% patients. Albumin found **Maximum in trace amount and cloudiness i.e32.5% & 32.5% patients.**

Table 12 Presence of sugar in urine in patients of *Madhumeha*

Sugar		No. of cases (n=40)	Percentage (%)
Absent		03	7.5%
Present	+1(Cloudy green ppt)	16	40%
	+2 (Yellow ppt)	10	25%
	+3 (Orange ppt)	10	26.5%
	+4 (Brick red ppt)	1	2.5%
Total		40	100

Out of 40 patients it was found that sugar in urine was absent in 7.5% cases where as 40% have traces of sugar, 25% have 30mmol/l increased sugar in urine, 26.5% have 60mmol/l increased sugar in urine and remaining 2.5% have 110mmol/l very high content of sugar in urine.

Table 13 Glycosylated heamoglobin (HbA1c %) wise distribution

Hba1c value	No. of patients (n=40)	Percentage%
6.5-8	14	35%
8.1-12.0	15	37.5%
12 -16	11	27.5%

Above chart reveals that out of 40 cases maximum i.e.35.7% & 35% having Hba1c value 6.5-8 &8.1-12.0 and 27.5% patients having 12-16 HbA1c level.

Table 14 Ojodusti Laksans Wise Distribution

s.no	Lakshan	No. of patient	Present	absent
1	*Sandhivishlesh*	40	47.5%	52.2%
2	*gataranamsadnam*	40	67.5%	32.5%

3	*Kriyasannirodh*	40	100%	-
4	*Stabthgurugatrta*	40	92.5%	7.5%
5	*Vaatsof*	40	45%	55%
6	*Galaani*	40	82.5%	17.5%
7	*Tandra*	40	95%	5%
8	*Nidra*	40	82.5%	7.5%
9	*Murcha*	40	-	100%
10	*Pralaap*	40	60%	40%
11	*Dourbalya*	40	85%	15%
12	*maanshkshya*	40	92.5%	7.5%
13	*Bibheti*	40	57.5%	42.5%
14	*Dhyayati*	40	95%	5%
15	*Vyatitendriya*	40	65%	35%
16	*dushchaya*	40	92.5%	7.5%
17	*durmana*	40	62.5%	37.5%
18	*Rukshta*	40	30%	70%
19	*Kshamta*	40	62.5%	37.5%

STATISTICAL ANALYSIS:

- Karl Pearson correlation method was used to check correlation between two parameters and the obtained results were interpreted as –
- Strongly positive –   r = 0.8=1
- Moderately positive –   r = 0.3=0.8
- Weakly positive -   r = 0=0.3
- Strongly negative -   r = -0.8 = -1
- Moderately negative -   r = -0.3= -0.8
- Weakly negative -   r = 0 = -0.3

Table 15 Assessment of HbA1c conc. with Ojodusti Laksans

S.no	Ojodusti laksana	Sample size	P*	r*	Correlation
1	*Sandhivishles*	40	0.21	-0.19	No relation
2	*gataranamsadnam*	40	0.00	0.42	Moderate positive
3	*Kriyasannirodh*	40	0.00	0.65	Moderate positive
4	*Stabthgurugatrta*	40	0.38	0.14	No relation
5	*Vaatsof*	40	0.12	0.24	No relation
6	*Galaani*	40	0.07	-0.28	No relation
7	*Tandra*	40	0.007	0.41	Moderate positive
8	*Nidra*	40	0.00	0.62	Moderate positive
9	*Murcha*	40	0.70	0.061	No relation
10	*Pralaap*	40	0.068	0.291	No relation
11	*Dourbalya*	40	0.57	0.92	Moderate positive
12	*maanshkshya*	40	0.82	0.36	No relation
13	*Bibheti*	40	0.00	0.717	Moderate positive
14	*dhyayati*	40	0.534	0.101	No relation
15	*vyatitendriya*	40	0.322	-0.161	No relation
16	*dushchaya*	40	0.00	0.58	Moderate positive
17	*durmana*	40	0.519	0.105	No relation
18	*Rukshta*	40	0.519	0.105	No relation
29	*Kshamta*	40	0.326	-0.159	No relation

After applying Karl Pearson correlation coefficient there was positive correlation found between HbA1c level and *gataranamsadnam, Kriyasannirodh, tandra, nidra, Bibheti, Dourbalya,* and *dushchaya* i.e p value is less than 0.050. Whereas no relation was found between HbA1c and *Sandhivishlesh, galaani, vyatitendriya, kshamta, Stabthgurugatrta, vaatsof, murcha, pralaap, maanshkshya,*

dhyayati, *durmana*, *rukshta* i.e p value is greater than 0.050.

Table 16 Assessment of Specific Gravity of Urine with Ojodusti Laksans

S.no	Ojodusti laksans	Sample size	P*	r*	Correlation
1	*Sandhivishlesh*	40	0.20	-0.16	No relation
2	*gataranamsadnam*	40	0.00	0.40	Moderate positive
3	*Kriyasannirodh*	40	0.00	0.70	Moderate positive
4	*Stabthgurugatrta*	40	0.25	0.12	No relation
5	*vaatsof*	40	0.11	0.22	No relation
6	*galaani*	40	0.06	-0.3	No relation
7	*tandra*	40	0.005	0.25	Moderate positive
8	*nidra*	40	0.00	0.56	Moderate positive
9	*murcha*	40	0.60	0.056	No relation
10	*pralaap*	40	0.055	0.300	No relation
11	*maanshkshya*	40	0.80	0.26	No relation
12	*Bibheti*	40	0.00	0.715	Moderate positive
13	*Dourbalya*	40	0.009	0.356	Moderate positive
14	*dhyayati*	40	0.535	0.103	No relation
15	*vyatitendriya*	40	0.345	-0.165	No relation
16	*dushchaya*	40	0.00	0.50	Moderate positive
17	*durmana*	40	0.516	0.110	No relation
18	*rukshta*	40	0.518	0.104	No relation
19	*kshamta*	40	0.324	-0.157	No relation

After applying Karl Pearson correlation coefficient there was positive correlation found between specific gravity and *gataranamsadnam,* *Kriyasannirodh,* *tandra*, *nidra*, *Bibheti*, *Dourbalya* and *dushchaya* i.e p value is less than 0.050.

Whereas no relation was found between specific gravity and *Stabthgurugatrta*, *vaatsof*, *murcha*, *pralaap*, *maanshkshya*, *dhyayati*, *durmana*, *rukshta* *Sandhivishlesh, galaani*, *vyatitendriya*, *kshamta* i.e p value is greater than 0.050.

Table 17 Assessment of Protein in Urine with Ojodusti Laksans

S.no	Ojodusti laksans	Sample size	P*	r*	Correlation
1	*Sandhivishlesh*	40	0.22	-0.18	No relation
2	*gataranamsadnam*	40	0.00	0.41	Moderate positive
3	*Kriyasannirodh*	40	0.00	0.66	Moderate positive
4	*Stabthgurugatrta*	40	0.37	0.15	No relation
5	*vaatsof*	40	0.13	0.25	No relation
6	*galaani*	40	0.08	-0.29	No relation
7	*Tandra*	40	0.008	0.42	Moderate positive
8	*Nidra*	40	0.00	0.64	Moderate positive
9	*murcha*	40	0.72	0.064	No relation
10	*Pralaap*	40	0.069	0.292	No relation
11	*maanshkshya*	40	0.83	0.37	No relation
12	*Bibheti*	40	0.00	0.718	Moderate positive
13	*Dourbalya*	40	0.011	0.410	Moderate positive

14	*dhyayati*	40	0.535	0.103	No relation
15	*vyatitendriya*	40	0.323	-0.162	No relation
16	*dushchaya*	40	0.00	0.59	Moderate positive
17	*durmana*	40	0.512	0.106	No relation
18	*rukshta*	40	0.512	0.106	No relation
19	*kshamta*	40	0.327	-0.161	No relation

After applying Karl Pearson correlation coefficient, there was positive correlation found between protein in urine and *gataranamsadnam*, *Kriyasannirodh*, *Tandra*, *Nidra*, *Bibheti*, *Dourbalya*, and *dushchaya* i.e p value is less than 0.050.

Whereas no relation was found between protein in urine and *Stabthgurugatrta*, *vaatsof*, *murcha*, *pralaap*, *maanshkshya*, *dhyayati*, *durmana*, *rukshta Sandhivishlesh*, *galaani*, *vyatitendriya*, *kshamta* i.e p value is greater than 0.050.

Table 18 Assessment of Sugar in Urine with Ojodusti Laksans

S.no	Ojodusti laksana	Sample size	P*	r*	Correlation
1	*Sandhivishlesh*	40	0.20	-0.18	No relation
2	*gataranamsadnam*	40	0.00	0.40	Moderate positive
3	*Kriyasannirodh*	40	0.00	0.63	Moderate positive
4	*Stabthgurugatrta*	40	0.36	0.12	No relation
5	*Vaatsof*	40	0.11	0.23	No relation
6	*galaani*	40	0.05	-0.27	No relation
7	*Tandra*	40	0.006	0.39	Moderate positive
8	*Nidra*	40	0.00	0.56	Moderate positive
9	*murcha*	40	0.69	0.060	No relation
10	*Pralaap*	40	0.066	0.290	No relation
11	*maanshkshya*	40	0.81	0.35	No relation
12	*Bibheti*	40	0.00	0.716	Moderate positive
13	*Dourbalya*	40	0.009	0.388	Moderate positive
14	*dhyayati*	40	0.532	0.99	No relation
15	*vyatitendriya*	40	0.321	-0.160	No relation
16	*dushchaya*	40	0.00	0.55	Moderate positive
17	*durmana*	40	0.517	0.104	No relation
18	*rukshta*	40	0.518	0.104	No relation
29	*kshamta*	40	0.325	-0.157	No relation

After applying Karl Pearson correlation coefficient there was positive correlation found between sugar in urine and *gataranamsadnam*, *Kriyasannirodh*, *tandra*, *nidra*, *Bibheti*, *Dourbalya* and *dushchaya* i.e p value is less than 0.050. Whereas no relation was found between

sugar in urine and *Stabthgurugatrta*, *vaatsof*, *murcha*, *pralaap*, *maanshkshya*, *dhyayati*, *durmana*, *rukshta Sandhivishlesh*, *galaani*, *vyatitendriya*, *kshamta* i.e p value is greater than 0.050.

DISCUSSION

In this study we use Karl Pearson's correlation coefficient to measure the correlation between rate of HbA1c with the laksana of ojodusti. The results showed the correlation coefficient between HbA1c conc. and the rate of ojodusti. Given the Significant level (p>0.050); HbA1c conc. level had a positive correlation with the rate of ojodusti laksana i.e *gataranamsadnam, Kriyasannirodh, tandra, nidra*, *Bibheti*, *Dourbalya* and *dushchaya* i.e p value is less than 0.050. That means with increasing level of HbA1c the rate of severity of these laksana in diabetic person increases. Those laksana are *gataranamsadnam, Kriyasannirodh, tandra, nidra*, *Bibheti*, *Dourbalya* and *dushchaya*.

As we see in the above criteria that *gataranamsadnam*, *Kriyasannirodh* comes under *ojo vishransh (*type of *ojo dusti)*. *Gataranamsadnam* is the inertness of the extremities and *Kriyasannirodh* is the impairment of function of body including physical, mental and vocal activity. *Ojo vishransh* is the condition where there is impairment in *oja* distribution along the body, increase HbA1c shows that, there is some deformity in metabolic activity of the body which favour the production of deficit *Oja* (qualitative and quantitative). Madhumeha results in loss of impoverished kind of *oja* from its channel, and disturbance in distribution of oja which

leads to *gataranamsadnam, Kriyasannirodh.*

As we see in the above criteria that *tandra* and *nidra* comes under *ojo vyapad (*type of *ojo dusti)*. The changes or modification of the natural property of *oja* under the influence of the vitiated *dosha* leads to a condition known as *ojo vyapad* , increase HbA1c favours increase *maadurya baav* in the body and alter the property of oja. *Madhurya baav* predominantly increase the *kaph dosh* in the body, which is responsible for *tandra* and *nidra* in the diabetic person.

As we know *Bibheti*, *Dourbalya*, *dushchaya* also directly relates to the increase HbA1c value, these are symptoms of *OjoKshaya (type of ojodusti). Ojo kshya* represents the outcome of loss of *oja*. This condition arises as a result of metabolic abnormality leading to diminished production of *oja,* increase HbA1c is biomarker of diabetes mellitus. In the pathogenesis of *Madhumeha* as we know that oja produced is deficiet in quality and quantity, this impoverished oja lost from the body through urine[11]. Although *oja* is responsible for the *bala* in body and its loss leads to the *Dourbalya* (weakness) and *dushchaya* (lossoflusture*),* due to loss of normal integrity, tone, strength of *dhatu* the patient feels constant fear i.e *bibheti.*

According to table number 15 we observe that no correlation between, HbAa1c level

and rate of severity of ojodusti laksana like, *Stabthgurugatrta*, *vaatsof*, *murcha*, *pralap*, *durbala*, *maanshkshya*, *dhyayati*, *durmana*, *rukshta*, *Sandhivishlesh*, *galaani*, *vyatitendriya*, *kshamta* i.e p value is greater than 0.050, these laksana are not statistically significant. Although, in this study it was observed that mild or absence of these above symptoms in diabetic person but they have no significance on the basis of statitistics. No evidence of relation was found between HbA1c value and ojodusti laksana. This means ojodusti occurs in Diabetes mellitus but up to what extent;could not be answered from this research work. For more acknowledgements of *oja* and *ojodusti* the research work required large sample size and large data to find some conclusion on the basis of these symptoms.

CONCLUSION

1. With increasing level of HbA1c the rate of severity of following ojodusti laksana increases. Those laksana are *Gataranamsadnam, Kriyasannirodh, Tandra, Nidra*, *Bibheti*, *Dourbalya* and *Dushchaya*.

2. No significant correlation between, HbA1c level and rate of severity of ojodusti laksana like, *Stabhagurugatrta*, *vaatsof*, *murcha*, *pralaap*, *maanshkshya*, *dhyayati*, *durmana*, *rukshta, Sandhivishlesh, galaani*, *vyatitendriya*, *kshamta.*

3. With progressive increase in HbA1c% in diabetic person there is subsequent decrease in quantity and quality of oja which leads to increasing in severity of *ojodustilakshan.*

4. With progressive increase in specific gravity, protein and sugar in urine, there is subsequent decrease in quantity and quality of oja followed by increasing severity of *ojodustilakshan*. The *laksana* showing positive correlation are *tandra, nidra*, *Bibheti*, *Dourbalya, gataranamsadnam and Kriyasannirodh.*

5. We observed that no significant correlation between, specific gravity, protein and sugar in urine and rate of severity of ojodusti laksana like, *Stabhaguru- gatrta*, *vaatsof*, *murcha*, *pralaap*, *maanshkshya*, *dhyayati*, *durmana*, *rukshta, Sandhivishleshgalaani*, *vyatitendriya and kshamta.*

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