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CROSS-SECTIONAL STUDY TO ESTABLISH AN ASSOCIATION BETWEEN STHULA-KRUSH PRAMEHI AND UNCONTROLLED DIABETES MELLITUS

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Summary:
Prameha has been described in most of the available classicsof Ayurved. According to Ayurved, Prameha is a disease that affects several systems; it depends on genetic and environmental factors and leads to complications if not controlled in the appropriate way.Acharya Sushruta has described two types of Prameha, i.e. Sahaja and Apathyanimittaja. While describing the line of treatment Acharya Charak has classifiedthe Prameha in two types especially on the basis of body constitution and causative factors i.e. Sthula Pramehi (seen in obese person) and Krisha Pramehi (seen in lean and thin person) and Santarpanjanya & Aptarpanjanya Prameha. Sthula pramehi is a type of santarpanajanyavyadhi (disease due to overnutrition) that has been includedin the classification of prameha roga. Two varieties of diabetics (pramehi) as classified in Ayurveda comprise, obese - strong (sthula and balavan) and thin-weak (Krishna).
Keywords: Prameha, Madhumeha, Diabetes, Sthula-Keusha, Obesity

Introduction:

Ayurveda is recognized as the foremost life science and describes ways toprevent and manage lifestyle disorders. The concepts of universal interconnectedness, the body's constitution (prakriti), and life forces (doshas) are the primary basis of Ayurved medicine. Goals of treatment aid the person by eliminating impurities, reducingsymptoms, increasing resistance to disease, and increasing harmony in life with rapid economic development and increasing westernization of lifestyle in the past few decades, the prevalence of various metabolic diseases has reachedalarming proportions among Indians in the recent years. Diabetes mellitus is an important global health concern of the present era and needs immediate attention. Diabetes Mellitus is described as a metabolic disorder of multiple etiologies characterized by insulin resistance, relative insulin deficiency, and hyperglycemia with disturbances of carbohydrate, fat & protein metabolism. According to International Diabetes Federation (IDF), the total number of diabetes subjects is around 40.9 Million in India.

Aims and Objectives:

1. To study the pathology of Prameha
2. To study Sthoulya and Karshya in Prameha
3. To study the relation between Uncontrolled Diabetes Mellitus with sthula krusha pramehi

Hypothesis:

Null Hypothesis: (H0) - There is no relation between Sthula-krush pramehi & uncontrolled DM

Alternative Hypothesis: (H1) – There is a relation between Sthula-krusha pramehi & uncontrolled DM

Materials & Method:

Type of study: Cross-sectional study

Sample size: 200 Patients

Place of study: The known case of Diabetes Mellitus attending the OPD's,IPD'S of .D.Y.PatilAyurvedic Hospital, Nerul, Navi Mumbai, fulfilling criteria for the selection irrespective of their gender, Age, Religion,Caste etc. were selected for the study.

Study sampling: Purposive sampling

Inclusion Criteria:

- Age group 30 to 60 years
- Chronicity >1 year
- Undertreatment (OHA)>1year

Exclusion Criteria:

- Patients having Diabetes in association with other endocrinopathies likeAcromegaly, Cushing's syndrome, Hyperthyroidism etc.
- Patients with genetic syndromes like Down's syndrome, klinefilter's syndrome, Turner's syndrome, etc.
- Patients taking drugs like corticosteroids, Tricyclic antidepressants, Cycloheptadine which leads to weight loss or weight gain.
- Patients with carcinoma or any other systemic diseases affecting multiple bodysystems and pregnant women etc.

Criteria of Assessment:

Subjective criteria:

Symptoms of Stolya and karshya were assessed in the patients. Each symptom is graded according to severity. The score is given from 0 to 4 , 0 indicates the absence of symptoms while 4 indicates the very severe condition.

Assessment of sthoulya:

SYMPTOMS	**Score 0**	**1**	**2**	**3**	**4**
1)Shushka Sphig Udar Griva	Seen on a normal walk	Observed by otherson brisk walking	Felt by the patient only on brisk walking	Only felt by t patient	Absent
2)Dhamanijal santat(Prominent venous network	Prominent t ,no pain	Prominentbut not restricting activity	Prominent , moderate activity limitation	Occasionally y palpable with painfulactivity	Severely pain with limiting activity
3)Twakasthi shesh	Excess fat	Fat	Average	Thin	Emaciate d

4)Vyayam asahatva(not suitable for heavy activity)	No tiredness	Mild afterwork	Tired after little work	Works with difficulty	The great difficultyin doing work
5)Atishitoshna maithunam na sahate(can't tolerate thirst,hunger,sexualacts)	Normal	Occasionall	Mild after exertion	Moderate after exertion	Doesn't tolerate anything
6)Kshutpipasaaushdha na sahate	Normal	Occasionall	Mild after exertion	Moderateafter exertion	Doesn'ttolerate anything

Assessment of karshya:

SYMPTOMS	**Score 0**	**1**	**2**	**3**	**4**
1)Shushka Sphig Udar Griva	Seen on anormal walk	Observed by others on brisk walking	Felt by the patient only onbrisk walking	Only felt by the patient	Absent
2)Dhamanijal santat(Prominent venous network	Prominent t , no pain	Prominentbut not restricting activity	Prominent , moderate activity limitation	Occasionally y palpable with painfulactivity	Severely pain with limiting activity
3)Twakasthi shesh	Excess fat	Fat	Average	Thin	Emaciated
4)Vyayam asahatva(not suitable for heavy activity)	No tiredness	Mild afterwork	Tired after little work	Works with difficulty	Great difficulty in doing work

5)Atishitoshna maithunam na sahate(can't tolerate thirst,hunger,sexualacts)	Normal	Occasionall	Mild after exertion	Moderate after exertion	Doesn't tolerate anything
6)Kshutpipasaaushdhana sahate	Normal	Occasionall	Mild after exertion	Moderateafter exertion	Doesn'ttolerate anything

Objective Criteria:

1) Assessment of Sthoulya and Karshya by BMI

Assessment of BMI_____Kg/m2

Metric BMI Formula: **BMI =(Weight in kilogram/Height in meters × Height in meters)**

Category	**BMI Range-kg/m2**
Severely Underweight	Less than 16.0
Underweight	From 16.0 to 18.5
Normal	From 18.5 to 24.9
Overweight	From 25 to 29.9
Obese class I	From 30.0 to 34.9
Obese class II	From 35 to 35.9
Obese class III	Over 40

II) Assessment of Waist to Hip ratio

WHR=Waist measurement/Hip measurement (measures different optimal values for both women and men)

Criteria	**Male**	**Female**
Low	0.95 or below	0.80 or below
Moderate	0.96 to 1.0	0.81 to 0.85
High	1.0+	0.85

III) Assessment of HbA1C & Mean Blood Sugar

HbA1C score (%)	**Mean Blood Sugar (mg/dl)**	**Remark**
12	345	**Uncontrol**
11	310	

10	275	
9	240	
8	205	**Fair control**
7	170	
6	135	**Good control**
5	100	

According to Assessment Criteria, patient were consider as Sthula Pramehi when patient fulfill two out of following three criteria

1. Symptoms scores of sthoulya are more than **16**
2. Waist to Hip ratio is **Moderate to High**
3. BMI is more than **25**

Similarly, patient were considered as Krusha Pramehi when patient fulfill two out of following three criteria

1) Symptoms scores of karshya are more than **12**
2) Waist to Hip ratio is **Low**
3) BMI is less than **18.5**

Observation & Result:

The Data collected from clinical study was analyzed as follows.

1. BODY MASS INDEX (BMI)

Assessment of Sthoulya and Karshya by BMI

Assessment of BMI_____Kg/m2

Metric BMI Formula: **BMI = (Weight in kilogram/Height in meters × Height in meters)**

Category	**BMI Range-kg/m2**
Severely Underweight	Less than 16.0
Underweight	From 16.0 to 18.5
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Overweight	From 25 to 29.9
Obese class I	From 30.0 to 34.9
Obese class II	From 35 to 35.9
Obese class III	Over 40

BMI more than **25** were considered as **STHULA PRAMEHI.** In the present study totalamong 200 patients 97(49%) patients had BMI above 25kg/ m^2 .i.e. they were considered in obese class.35(17.5%) patients were under normal category i.e. BMI range was between 18.5 to 24.9 kg/m^2 and 68(34%) patients were with BMI less than **18.5** which were considered as **KRUSHA PRAMEHI.**

1. Table showing distribution according to BMI

	No. Of Patients	**Percentage%**
24 and above	97	48.5%
19 to 23	35	17.5%
18 and less	68	34.0%

2. Distribution of Controlled and Uncontrolled DM

According to the score of HbA1c and Mean Blood sugar level the subjects were divided into Uncontrolled and Controlled DM. In the table below classification of Uncontrolled and Controlled DM is given

3. Table showing classification of Uncontrolled and Controlled DM

HbA1C score (%)	**Mean Blood Sugar (mg/dl)**	**Remark**
12	345	**UNCONTROL**
11	310	
10	275	
9	240	
8	205	**FAIR CONTROL**
7	170	
6	135	**GOOD CONTROL**
5	100	

4. Table showing distribution according to Uncontrolled and Controlled DM

	No. of Patients	**Percentage %**
Controlled DM	85	42%
Uncontrolled DM	115	58%

In the present study were 200 subjects were taken into consideration, among them maximum of 115 patients 58% had Uncontrolled Diabetes Mellitus and 85 patients (42%) had controlled Diabetes Mellitus.

5. Table showing distribution of 50 patients with fair controlled DM with HbA1c score

	No. of Patients	**Percentage%**

Fair controlledDM	**HbA1C Score with 7%**	33	66%
	HbA1C Score with 8%	17	34%

6. Association of Akruti and DM:

Among 200 patients, 129 patients were found fulfilling the *sthaulya* criteria among Which 33(39%) patients had controlled DM and 96(83.5%) patients had uncontrolled DM.71 patients were found fulfilling the *karshya* criteria among them 52 (61%) patientshad controlled DM and 19(16.5%) patients had uncontrolled DM.

7. Table showing association of Akruti and DM

		DM			
		Controlled DM		**Uncontrolled DM**	
		No. of Patients	**Percentage%**	**No. of Patients**	**Percentage%**
AKRUTI	STHAULYA	33	39%	96	83.5%
	KARSHYA	52	61.2%	19	16.5%

8. Chi-Square test result:

	Value
Chi-square	42.563
Df	1
p-value	.000*

Interpretation: p-value less than that of 0.05 indicates significance of association between Akruti and DM. It can be observed from data that 83.5% Uncontrolled DMis of mostly sthoulya and karshya is associated Controlled DM.

Discussion:

1. Discussion on Assessment Criteria:

In Ayurveda, Acharya Charaka, has classified Prameha into two types, i.e. Sthula Pramehi and Krisha Pramehi or Santarpanajanya and Apatarpanajanya Pramehi. It can also be correlated with the classification given by Acharya Vagbhata, i.e. Dhatu Kshayajanya and Avaranajanya Prameha, respectively. Ayurveda explains obesity as 'Sthula' – a condition of excessive deposition of fat muscle in buttock and breasts, development of different body parts unequally and lack of enthusiasm. Obesity leads to Prameha. The role of Medas (fat/adipose tissue) isof great importance in th pathogenesis of Prameha. This form of Medas has been described as acting on Mamsa (muscle tissue), thereby increasing the volume of body fluid. This has been described as Sharira-Kleda (body fluid) in Ayurveda. Thus, excesswater in the blood causes increased diuresis. This is how the Sharira Kleda is convertedinto urine which discussed in Charak Samhita. This route of pathogenesis for Prameha is closely related to obesity.

Abdominal Obesity: Extra weight around the middle and upper parts of the body (central obesity). This body type may be described as "apple- shaped.

2. Discussion on Sthula Pramehi and Uncontrolled DM

Among 200 patients, 129(64%) were sthula pramehi patients 96(83.5%) patients had uncontrolled DM.Prameha is said to be one of the complications of obesity. Physical inactivity and excessive intake of food results in to Agni dushti that causes formation of Ama. In Ayurveda, Ama is the toxic intermediary product of digestion and metabolism, result from improperly digested food. Improper Agni (digestive metabolic activity) causes accumulation of Ama. Ama leads to additional formation of Medas (fat) that causes increase in adipose tissue in the body and becomes overweight. The multi factor involvement of Medas (fat), Kapha, Vata, and Agni (digestive metabolic activity) is common path physiologic phenomenon of both Prameha and obesity. In obese individuals carbohydrate is largely converted to fatty acids.

3. Discussion o*n Krusha Pramehi* and Uncontrolled DM

71 patients were found fulfilling the karshya criteria among them 52 (61%) patients had controlled DM and 19(16.5%) patients had uncontrolled DM.Daurbalya-One may faint if he or she stands up hurriedly. The heart may beat too fast.If these symptoms are noticed suddenly or accompanied with shortness of breath, chestpain, indistinct speech, or vision loss, it is a highly complicated case. This occurs due to slowing of or clogged blood flow to the heart or brain Fluctuations in Sweating One may not sweat even in extreme hot climate; others may sweat too frequently especially while eating or at nights. This is an indication that a person's sweat glands aren't functioning properly. Deteriorated Sex Life An uncontrolled diabetic man may feel like finding hard to get and/or maintain an erection. Women may experience vaginal dryness and loss of stimuliwhile in aroused state, and they face difficulty in facing orgasms as well.

Conclusion:

1. Out of 200 patients 129 patients were found sthula pramehi among which 33 patients i.e. 39% had controlled DM and 96 patients i.e. 83.8% had uncontrolled DM. So it suggests that Sthaulaya (Obesity) is interfering in glucose control of Diabetes. This might be due to avaranajanya samprampti

2. Based upon the observation in the presents study, sthulata andkrushata concept in Ayurveda is having great role for the controlled and uncontrolled status of diabetes.

3. It indicates that sthulata and krushata is interfering the gucose regulation in diabetes mellitus which is responsible for controlled and uncontrolled status of diabetes. According to Ayurveda this might be due to Avaranajanya samprapti because of vitiation of Dashavidha Dushyasangraha.

4. We have found a significantly high prevalence (83.8%) of uncontrolled DM among the patients, possibly attributable to overweight/obesity, sedentary living, higher income and lack of information on diabetes. Addressing these determinants will require re-engineering of primary healthcare in the district

5. By statistical analysis Sthula Pramehi showed significant association withUncontrolled Diabetes Mellitus.

6. The subjective symptoms were found more in the subjects with Kaphapradhan or Kaphaanubandhitva prakruti

7. According to Chikitsa point of view, *n*idanaparivarjana is the ultimateremedy in this disease

8. Clinicians should pay attention to the determinants of uncontrolled diabetes andovercome their inertia to initiate and optimize insulin therapy in the management of individuals living with diabetes. There is an urgent need for re- engineering of primary healthcare with prioritization of diabetes care.

References:

1. Amarakosha satika by Bhanuji Dixit published by ChaukhambaSanskrit Sansthan, Varanasi – Edition 1970
2. Charaka samhita by Pdt KashinathShastri published by Chaukhamba Bharati Academy – Edition 2002
3. Sushruta samhita by Dr.Anantram Sharma publishesd by Chaukhamba Surbharti – edited in 2000
4. Madhavanidana by Sudarshan shastri &Yadunandan Upadhyay - 3rd edition
5. Pandey V N et.al. An effective Ayurvedic Hypoglycaemic formulation. Journal of Research in Ayurveda and Siddha. 1995; 16(1-2): 1-14.
6. Kamble S M et al. Efficacy of Coccinia indica W & A in Diabetes mellitus.Journal of Research in Ayurveda and Siddha. 1996; 17(1-2): 77-84.
7. Srikanth N. An appraisal of clinical trials in Diabetes Retinopathy, AyurvedicManagement of Diabetes Mellitus. New Delhi: Rashtriya Ayurveda Vidyapeeth; 2005
8. CCRAS Research – An Overview. New Delhi: Central Council for Researchin Ayurveda and Siddha, Janakpuri; 2002.
9. Annual Reports (1998-99 to 2007-08), Central Council for Research in Ayurveda and Siddha, Department of AYUSH, Ministry of Health and FamilyWelfare, Govt. of India.
10. Nanda G C, Chopra K K, Sahu D P and Padhi M M. Nishamalaki in Madhumeha (NIDDM): A Clinical Study. Journal of Research in Ayurvedaand Siddha. 1998; 19(1-2)
11.Diabetes Mellitus (Madhumeha) and Ayurvedic management: an evidence based approach N.Srikanth1 N. Haripriya2 , Renu Singh1 , Manjula1 , *Devesh Tewari1 1Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Government of India, New Delhi