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Contributory factors in Juvenile Diabetes manifestation from Ayurvedic View - A Cohort Survey

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ABSTRACT

Over the period of time, human race has evolved and till date the development is going on. There is continuous civilization and change in life style of human being. Due to these changes in life style, human being is constantly struggling against the changing environmental conditions to maintain optimum health and vigor throughout the life. These changes have lead to increase in the disease burden in the society. Juvenile Diabetes is also such condition which is going to increase day by day in children. Children are the most vulnerable community in society. Juvenile diabetes (Insulin Dependent Diabetes Mellitus – IDDM/ Type 1 DM / T1DM) is the most common endocrine/metabolic disorder of childhood and adolescence. The high prevalence data of Juvenile Diabetes is also alarming. Globally, the incidence of Type 1 DM is increasing in children and youth by about 3% per annum. It is characterized by deficient insulin production and requires daily parenteral administration of insulin, otherwise may prove fatal. The cause of type 1 diabetes is not known and it is not preventable with current knowledge. So a survey of 50 diagnosed juvenile diabetes patients in Jamnagar city of Gujarat state was conducted. With this survey study an effort has been done to find out some contributory factors in the manifestation of the disease from an Ayurvedic perspective.

Key words: *Juvenile Diabetes, Survey, Ayurveda.*

INTRODUCTION

21st century is 'century of science and technology'. Newer inventions of the science have made human life very fast and easy, and physical work is replaced by mental work. With the advancement in science, man is climbing the steps of success but moving away from Nature! This condition has given birth to many life style diseases. Man has responded to the growing challenges of modernization and also has tried successfully to maximize his intellectual and physical capabilities for deriving highest amount of productivity. Man has adapted himself to the fast paced life by modifying his dietary and lifestyle preferences to suit the modern era. This has resulted in a state of discrepancy between the external environment and his internal mechanism causing multitudes of diseases which are popularly known as lifestyle diseases.

Diabetes is the disease of today's era. Amongst many dreadful conditions arising because of modern day living, Diabetes Mellitus is a giant disease considered as one of the 'arch enemy of the mankind' caused by improper diet and lifestyle. It is often referred to as a "Silent Killer". Diabetes and its complications pose a major threat to public health resources throughout the world. In recent WHO classification, the diabetes grouped as non-communicable life style disorder.[1]

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Juvenile diabetes (Type 1 DM/T1DM) is the most common endocrine-metabolic disorder of childhood and adolescence period, with important consequences on physical and emotional developments. Individuals with type 1 DM confront serious lifestyle alterations that include an absolute daily requirement for exogenous insulin, the need to monitor their own glucose control, and need to pay attention to dietary intake.[2] The majority of type 1 diabetes occurs in children and adolescents.[3]

Surveys are the most frequently used method used in medical education research. However, because the medical community is the most frequently surveyed population, response rates are typically low. Therefore, it is critically important that potential respondents perceive surveys as important and interesting so they are more likely to participate in the research. Not only must the items be interesting, they must be limited so that the survey is not a burden for busy people. If each item provides a critical piece of information and response rate is high, the researcher should be in a good position to answer his/her question.

Ayurveda being a practical oriented science, the utility of any concept must be assessed. Survey method of research provides insight into the attitudes, thoughts, temperament, constitution and opinions of populations. With this idea as a part of this study practical assessment for the confirmation of the concept has been kept as survey study.

As described previously in this study, Juvenile Diabetes is a new entity to understand through Ayurveda and this is a first study of its nature in the subject field of Ayurveda. So a survey study was planned and an effort was done to highlight some key facts about the epidemiological and causative factors of Juvenile Diabetes through Ayurveda.

Objectives of the Study

To study the etiological and contributory factors in the disease Juvenile diabetes through a survey of affected patients.

Material and Methods

- Pre diagnosed patients of Juvenile diabetes being treated with conventional treatment modalities have been identified and they along with their parents had form the subjects of survey study. The help of Juvenile Diabetic Foundation (NGO working for welfare of such patients in Jamnagar) also have been taken.
- **Study design:** Cross-sectional survey study was done to understand the etiological and contributory factors in the disease Juvenile diabetes through Ayurveda.
- **Place of Study:** Jamnagar
- **Informed Consent:** Informed written assent was taken from the parents / guardians of the patients prior to the survey study after offering sufficient explanations about the study and its aims.
- **Sample size:** 50
- **Study tool:** To fulfil the aims and objectives a specially prepared proforma was designed and all details of the patients were recorded in it.

Observations

In this study, maximum patients, 20 (40%) were from age group of 10-13 years. 08 (16 %) in each patients were from age group of 6 - 9 years and 14 - 16 years. 06 (12%) were from age group of 2 - 5 years. 04 (8%) in each patients were from 17 - 20 years and > 20 years. In the present study, 20 (40%) patients were males and 30 (60%) patients were females. 30 (76%) patients were from Hindu religion and 12 (24%) patient was from Muslim religion in present study. maximum 34 (68%) patients belong to *Sadharana Desha* while 10 (20%) patients belong to *Jangala* and 06 (12%) *Anoopa Desha*. 28 (48%) patients were from Urban habitat and 16 (32%) patients were from Rural habitat while 06 (12%) patient were from Semi Urban habitat.

It was observed that 15 (30%) patients were from Middle class,11 (22%) patients were from Lower Middle class, 09 (18%) patients were from Middle

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Upper class, 08 (16%) were from Lower class while 07 (14%) patient were from Upper class.

Prabhuta Mutarata was found in 96%, *Avila Mutrata* was found in 74%, *Kshudhadhikya* was found in84%, *Trishnadhikya* was found in 86%, *Karapadataladaha* was found in 22%, *Kara- Pada Suptata* was found in 26%, *Atisweda* was found in 46%, *Gala Talu Shosha* was found in 70%, *Daurbalya* was found in 76%, *Shrama* was found in 18%, *Pindikodweshtana* was found in 28% and *Bharahani* was found in 70%. (Table 1).

It was observed that 13 (26%) patients were found diagnosed at the age between 6 – 10 years. 17 (34%) patients were observed between 1 – 5 years. 15 (30%) patients were observed at >10 years. While 05 (10%) patient were diagnosed at the age < 1 year. It was observed that 24 (48%) patients were found with the chronicity of 1 – 5 years. 06 (12%) patients were found with the chronicity of less than 1 year,13 (26%) patient were found with the chronicity between 6 – 10 years while 07 (14%) patients were found with the chronicity of more than 10 years. All the 50 (100%) patients were found with the positive history of taking Injectable Insulin. Most of 44 (88%) patients were taking Pre – Mixed (Rapid + Long) acting type of injectable Insulin while only 06 (12%) patient was taking Pre – Mixed (Rapid + Intermediate) acting type of injectable Insulin. 40 (80%) patients were found with the positive history of Diabetic Keto Acidosis (DKA) while 10 (20%) patents were not having this type of complain.

In this study 07 patient having positive history of Diabetes Mellitus Type 2 in Mother side and 06 patients having positive history of Diabetes Mellitus Type 2 in Father side while 37 patients having No family history of Diabetes Mellitus Type 2. No any of the patients having family history of Diabetes Mellitus Type 1. History of consanguinity marriage was found in 12 (24%) cases and no such history was found in rest of the 38 (76%) cases. 13 mother parents in < 20 years, 28 mother parents in between 21 – 25 years, 07 mother parents in between 26 – 30 years and 02 in between 31 – 35 years were observed for marriage age. While 32, 08 and 05 father parents were observed in between 21 – 25 years, 26 – 30 years and 31 -35 years for marriage age respectively. In this study 29 (58%) patients were having Severely Underweight. 06 (12%) in each patients were having very Severely Underweight and underweight. While 09 (18%) patient was having normal BMI.

28 (56%) patients had dietary habit of *Vishamaashana*. *Adhyashana* was found in 06 (12%) patients, *Samashana* was found in 03 (6%) patients and *Viruddhaashana* was found in 09 (18%) patients. While no any patient was considered as *Anashana.* Most of the patients, 039 (78%) had vegetarian diet and rest of 11 (22%) patients had mixed diet in this study.

It was observed that maximum of the patients, 34 (68%) were used to have *Madhura Rasa Pradhanya* diet, 5 (10%) were used *Amla Rasa Pradhanya* diet Each of 07 (14%) patients showed *Katu Rasa Pradhanya* in diet. No any patient was used to take *Tikta* and *Kashaya Pradhana* diet. In 43 (86%) patients Predominance of *Sheeta Guna* in diet was found. *Guru Guna* in diet was observed in 37 (74%) patients in each. Predominance of *Laghu, Ruksha* and *Ushna Guna* in diet were seen 06 (12%), 03 (06%) and 09 (18%) patients respectively. In this study, 3 (6%) patients had moderate and poor appetite, while 37 (74%) patients had excessive appetite and 14% patients were having good appetite. Maximum 37 (74%) patients were taking cold drinks while 7 (14%) patients were taking tea and coffee were taken by 8% of patients. In this study 29 (58%) patients were having *Madhyama Koshtha* while 12 (24%) were having *Mrudu Koshtha* while 09 (18%) patients were having *Krura Koshtha*. Fear, Irritation, Tension and Anger were found in 11 (22%), 06 (12%), 07 (14%), 15 (30%) patients respectively. Mean while 03 (06%) and 8 (16%) patients were found as Jovial and Calm respectively.

Vata Pitta Shaareerika Prakriti was found in 06 (12%) patients, *Pitta Kapha* was found in 08 (16%) patients and *VataKapha* was found in 36 (72%) patients. In this present study, 09 (18%) patients had *Madhyama*

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Saara, while 34 (68%) patients had *AvaraSaara.* In this present study maximum 38 (76%) patients had *Avara Samhanana* while in 12 (24%) patients were having *Madhyama Samhanana*. *Madhyama Satva* was found in 13 (26%) patients while *Avara Satva* was found in 37 (74%) patients in the study. In this study maximum 40 (80%) patients had *Avara Saatmya* and 10 (20%) patients were having *Madhyama Saatmya.* It has been found that 36 (72%) patients had *Uttama Abhyavaharana Shakti.* While 09 (18%) patients had *Madhyama Abhyavaharana Shakti* and 10% were having *Hina Abhyaharana Shakti*. It has been found that 13 (26%) patients had *Madhyama Jarana Shakti* and 31 (62%) patient had *Hina Jarana Shakti* while 06 (12%) patients had *Uttama Jarana Shakti.*

44 (88%) patients had *Avara Vyaayama Shakti* while 06 (12%) patient had *Madhyama Vyaayama Shakti*. 42 (84%) patients were of *Bala* and 08 (16%) were *Yuva*. *Rasa*, *Meda*, *Oja*, and *Mutra Dushti* were found in all 50 (100%) patients. While 46 (92%) patients had *Sweda Dushti*, 43 (86%) patients had *Purisha Dushti*, 16 (32%) were having *Mamsa Dushti*. *Rasavaha* and *Mutravaha Srotodushti* were found in all 50 (100%) patients in the study. While 46 (92%) patients had *Medavaha Srotodushti*, 38 (76%) patients had *Mamsavaha Srotodusti*, 33 (66%) patients had *Purishvaha Srotodusti*. *Vishamaagni* was found in maximum number of patients 43 (86%) and *Mandagni* was observed in 7(14%) of patients. *Paya* (70%), *Navanna* (30%), *Ikshu Vikara* (44%), *Gramya Ahara* (22%) and *Dadhi*(38%) were noted as dominant provocative factors. In this study *Avyayama* (74%), *Diwaswapa* (72%), *Alasya* (60%) and *Asya Sukham* (42%) were noted as prominent life style related provocative factors by patients' mother during pregnancy.

Table 1: *Pramukha Vedanaa Vishesha* (cardinal features) wise distribution (N=50)

Cardinal Features	Total	%
Prabhuta Mutarata (Polyuria)	46	96
Avila Mutrata (Turbid Urine)	37	74
Kshudhadhikya (Polyphagia)	42	84
Trishnadhikya (Polydipsia)	43	86
Karapadataladaha (Burning sensation in palms & soles)	11	22
Kara- Pada Suptata (Numbness in palms & soles)	13	26
Atisweda (Excessive Perspiration)	23	46
Gala Talu Shosha (Dryness of Mouth)	35	70
Daurbalya (Weakness)	38	76
Shrama (Fatigue)	09	18
Pindikodweshtana (Cramps in calf muscles)	14	28
Bharahani (Loss of Weight)	35	70

DISCUSSION

Juvenile Diabetes is a new entity to understand through Ayurveda and this is a first study of its nature in the subject field of Ayurveda. So a survey study was planned and an effort was done to highlight some key facts about the epidemiological and causative factors of Juvenile Diabetes through Ayurveda.

Total 50 Pre diagnosed patients of Juvenile diabetes being treated with conventional treatment modalities were identified and they along with their parents had form the subjects of survey study. The survey was done in Jamnagar city of Gujarat state. A specially prepared proforma was designed and all details of the patients were recorded in it. The major outcomes from the survey are as discussed below.

In this study, maximum patients, 20 (40%) were from age group of 10-13 years. 08 (16 %) in each patients were from age group of 6 – 9 years and 14-16 years. 06 (12%) were from age group of 2 – 5 years. 04 (8%) in each patients were from 17 – 20 years and > 20 years. These results correspond with the fact of

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greater risk of type 1 that although type 1 diabetes can appear at any age, it appears at two noticeable peaks. The first peak occurs in children between 4 and 7 years old, and the second is in children between 10 and 14 years old.[1] In the present study, 20 (40%) patients were males and 30 (60%) patients were females. Although most common autoimmune diseases disproportionately affect females, on average girls and boys are equally affected with T1DM in young populations.[2]

Population based survey in six largest Indian cities also extrapolated similar observations nationwide, applying a 4:1 Urban: Rural ratio for prevalence of diabetes.[3] Greatest burden of diabetes among urban population could be due to their fast track life style and taking variety of junk foods. It presents an alarming risk of rise in prevalence of diabetes in future, unless preventive strategies are introduced.

Presently diabetes can no longer to be considered as disease of rich. Higher incidence of T1DM was found in middle (30%) and lower middle (22%) class, which is consistent with the predictions of WHO that currently more than 70% of people with diabetes live in low and middle income countries.[4] This data shows that DM is no more a disease of affluent society. Prevalence of disease is now rapidly increasing in middle and lower middle class society due to change in lifestyle occurred due to urbanization.[5] The data from IDF also supports that approximately 54% children with diabetes live in middle- and low-income countries.

Prabhuta Mutarata was found in 96%*, Avila Mutrata* was found in 74%, *Kshudhadhikya* was found in 84%*, Trishnadhikya* was found in 86%*, Karapadataladaha* was found in 22%, *Kara- Pada Suptata* was found in 26%, *Atisweda* was found in 46%, *Gala Talu Shosha* was found in 70%, *Daurbalya* was found in 76%, *Shrama* was found in 18%, *Pindikodweshtana* was found in 28% and *Bharahani* was found in 70%. All these symptoms are the main characteristics acoording to Ayurveda as well modern medical science. This suggest that most of the patients had developed the classical symptoms. This also suggest that although taking of modern medical management i.e. Insulin, the patients were not asymptomatic. So it suggest that there is a need of some other adjuvant therapies like Ayurveda which have role to improve this condition symptomatically. The high number in the age group between 1 – 5 years (34%) and between 6 -10 years (26%) [Total 60%] supports the data that although type 1 diabetes can appear at any age, it appears at two noticeable peaks. The first peak occurs in children between 4 and 7 years old, and the second is in children between 10 and 14 years old.[6] T1DM is a chronic metabolic disorder. The surveyed population was majorly from the age group of 10 – 13 years and as above mention the first peak of the disease is seen between 4 and 7 years.[7] So the high number of chronicity with 1 – 5 years (48%) is clearly supported by this data. 40 (80%) patients were found with the positive history of Diabetic Keto Acidosis (DKA). As DKA is the most commonly seen complication of T1DM in children.[8] Concerning the age as they are children; mismatch between insulin dose on the one hand, and irregular and sometimes uncontrolled meal i.e. sweets, chocolates, biscuits, junk food etc. on the other can lead to complication like DKA.

Though the disease is of unknown cause till date, but it is believed that it is a combination of genetic and environmental factors. Risk factors include having a family member with the condition.[9] The risk of a child developing type 1 diabetes is about 5% if the father has it, about 8% if a sibling has it, and about 3% if the mother has it.[10] In this study majority of patients (74%) were observed negative family history for the same disease i.e. Diabetes, indicates that other than genetic factor definitely there are some other factors which influences the disease. One data supports that for identical twins, when one twin has type 1 diabetes, the other twin only has it 30%-50% of the time. Thus for 50%-70% of identical twins where one has the disease, the other will not, despite having exactly the same genome; this suggests that environmental factors, in addition to genetic factors, can influence the disease's prevalence.[11] The main mechanism involves an autoimmune destruction of the insulin-producing beta cells in the pancreas in

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T1DM.[12] Still, a process that appears to be common to most risk factors is an autoimmune response towards beta cells, involving an expansion of auto reactive CD4+ T helper cells and CD8+ T cells, autoantibody-producing B cells and activation of the innate immune system.[13]

There are two different opinions on vaccination and their role on influence of the disease T1DM. Some are positive while some are negative. A research study conducted by Classen says that when infants are given vaccines at two months of age and older, some infants may already have a sub-clinical inflammation of insulin secreting cells due to exposure to diabetes-inducing viruses carried by the mother such as coxsackievirus B infections. When babies with this sub-clinical inflammation are injected with vaccines, the existing inflammation is made worse by the release of interferon and causes an autoimmune state leading to immune mediated Type 1 diabetes later in childhood. Classen's data shows there can be a 1 to 4 year latency between the time the vaccines are given and Type 1 diabetes appears.[14] By this data it can be said that there is a definite relation between the T1DM and immunization. As in this study most of the patients (88%) were properly immunized, so it may be the reason for their onset of T1DM. Because a vaccine artificially manipulates the immune system in order to make it act as if it has recovered from and is immune to a particular disease, some scientists are investigating whether vaccination can be a co-factor in the development of autoimmune diseases like diabetes. This research is particularly important for individuals who may have a genetic predisposition to autoimmunity, such as those with a family history of autoimmune disease.[15]

However this aspect of role of vaccines in genesis of disease T1DM needs further scientific exploration and studies. After that only some concluding relation can be established between immunization and T1DM.

In this study 29 (58%) patients were having Severely Underweight. 06 (12%) in each patients were having very Severely Underweight and under-weight. While 09 (18%) patient was having normal BMI. One study showed that newly diagnosed type 1 diabetes patients who went into remission of insulin therapy had greater insulin sensitivity than patients who continued to require insulin therapy. In addition, they found that more than a year post-diagnosis, insulin sensitivity in these patients was associated with body weight and was significantly reduced. Ludvigsson et al. described in a national cohort of patients with type 1 diabetes that those with higher BMI had higher C-peptide at diagnosis, but then lost relatively more C-peptide during the first years after diagnosis. Weight loss is the classical symptom of T1DM. Thus most of the patients were observed as underweight.

Similarly, in Ayurveda, *Prameha* is included under *Medodhatu Dushti Vikara*, Here *Jataja Prameha* is considered as a *Dhatukshyajanya Anilatmaka* (*Vata Pradhana Tridoshaja*) condition which is justified by obtained data.

AharaVidhi includes Dietetic Habit, Nature of Diet, Predominance of *Rasa,* Predominance of *Guna,* Appetite and Beverage. All this are discussed here in the context of T1DM. Most of the patients had dietary habit of *Vishamaashana* (56%), nature of the diet was found as vegetarian (78%), *Madhura Rasa Pradhanya* diet (68%), *Guru* and *Sheeta Guna Pradhanya* diet (86%), excessive appetite (74%) with the habit of taking beverages (74%) were observed.

As children are concern the strict diet meal plan cannot be followed by them. But on the other hand due to excessive hunger as a classical symptom, children takes any kind of food at any time. This is considered as *Vishamaasana* for them. A peculiar habit of consuming food in small amounts frequently (Nashta) is also prevalent in the region. Such dietary habits have been emphasized in classics as factors of disease provocation with special reference to *Prameha*.[16] Hence, diet, both in quantity and quality and pattern of intake can affect the health. All these dietary irregularities further contribute to disturb the carbohydrate and lipid metabolism and consequently result in *Dhatvagnimandhya*. So ultimately it leads to poor glycemic control and other life threatening conditions like DKA. Ayurveda recommends

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*SthulaPramehi*person diet should be of *Apatarpanajanya* and heavy for digestion, while *KrishaPramehi*person diet should be *Santarpanajanya* and light in digestion.[17]

The relation of diabetes care and religious bound dietary patterns is an important issue in community health. Although, majority (78%) of patients were vegetarian due to the demographical dominance of the Hindu community in the region of study.

Madhura Rasa, Guru and *Sheeta Guna Pradhanya* diet with excessive appetite was observed in the study. Such type of food and food habits are directly related with the impaired metabolism. It is well established that when the hypothalamus in the brain registers excess glucose, the biochemical mechanisms respond as if the glucose is the end product of the digestion of wholesome carbohydrates and fats. Therefore, the hypothalamus prepares for an increase of glucose. However, whatever glucose was going to arrive has already been digested. Nevertheless, the pancreas secretes insulin to metabolize the glucose it is "expecting." The glucose that was ingested was already utilized or bound in tissues unavailable to the body. But when the insulin secretory beta cells are destructed, the excessive sugar intake is not compensated by the body and leads to the disease condition T1DM. Beverages like cold drinks also have a high level of sugar which also creates such pathology as described above.

Prakruti plays an important role in susceptibility of patients to the disease of same *dosha*. A study based on *Prakriti* and relation to metabolism reported that V*K* body type was a significantly correlated with diabetes mellitus, hypertension, and dyslipidemia with highest levels of inflammatory markers such as IL6, TNF alpha, hsCRP, and HOMA IR.[18]

It has been found that 13 (26%) patients had *MadhyamaJarana Shakti* and 31 (62%) patient had *Hina Jarana Shakti* while 06 (12%) patients had *Uttama Jarana Shakti*. As the disease condition is *Dhatukshyajanya* which is an end result of *Agnidushti*. So the patient suffers with various digestion problems. A data supports that as with other complications of diabetes, the duration of the disorder and poor glycemic control seem to be associated with more severe GI problems in which Gastroparesis is commonly seen complication of diabetes. Diabetic gastroparesis is a condition in which emptying of food from the stomach is delayed, leading to retention of stomach contents. This may cause bloating, early satiety, distention, abdominal pain, nausea, or vomiting. Gastric stasis may lead to worsening gastroesophageal reflux along with symptoms of heartburn and mechanical regurgitation of gastric contents. In addition, fatty foods and very fibrous foods normally exit the stomach slowly and may be poorly tolerated.[19] This data clearly indicates the *Agnidushti* in *Prameha*.

People in Jamnagar region prefer to consume over oily, deep fried and sweet predominant food items. In Gujarat, a high dependence of milk products and oily foods coupled with genetic factors are responsible for diabetes.[20] Cotton seed oil is found mostly used in cooking, however, it is reported to have considerably high polyunsaturated fatty acids levels which decrease the favourable high density lipoprotein cholesterol levels in the blood and may adversely affect the lipid profile of individual.[21] Consumption of "*Nava Anna*" (fresh harvested grains) is common among the population which is stated as one the causative factor for diabetes in Ayurveda.[22]

The people are fond of flour preparations, Farsan (salty and spicy snacks), Fermented food items (Dhokla, Khaman, Idli, Dosa etc.), Bhajiya Puri (salty oily feast), sweetened drinks, refrigerated, preserved and reheated food items. Due to increasing restaurant culture, people are in habit of taking their meals outside frequently. Dependency on packaged food like chips etc., has increased manifold owing to the busy schedules of society today, wherein they hardly have time to eat at home. Fewer intakes of dietary fibres and more intake of foods having high glycaemic loads (viz., starchy items like potatoes) was observed in the subjects, which is associated with increased risk of diabetes.[23]

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Most of the patients are reported consuming milk along with *Khichadi* (a type of food item predominant with rice, Moong Dal, flavoured with salt and spices); *Gathiya* (a type of salty snack) with tea; cold drinks in lunch and dinner, *Shrikhanda* (sweetened curd preparation) etc., which are few of the dietary incompatibilities explained in the Ayurvedic classics under the heading of *Guna Viruddham.*[24] These dietetic incompatibilities might be responsible in vitiation of *Kapha* and *Pitta Dosha* and *Dushti* of *Mamsa* and *Meda Dhatu* which may in turn cause *Prameha*. *Acharya* Charaka has quoted that using of sweet things constantly by mother can make the offspring suffer from *Prameha*. So it indicates that if the pregnant woman resorts to the regimens described as the causative factor for the various diseases, her offspring also predominantly suffers from the disease caused by such etiological factors.[25]

CONCLUSION

A survey study of 50 pre diagnosed patients of T1DM came out with some supposed contributory factors such as diet and lifestyle due to alteration in today's fast changing eating and living habits. No genetic predisposition was seen in majority of the surveyed population; however the sample size for survey is too small (n=50) to comment, though many studies with survey data support the genetic predisposition of this disease. Age of diagnosis, Socio Economic Status, Cardinal features, Drug dependency, Immunization history, Faulty diet habits, Improper digestion as vitiated *Agni* and faulty regimens during pregnancy by mother were observed as contributory and supportive factors for T1DM.

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