

## **DIET AND PREDIABETES – A SURVEY BASED STUDY**

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### **ABSTRACT**

A stage in which individuals are at greater risk of progressing to type 2 DM & have an increased risk of cardiovascular diseases is called as **Prediabetes**, if neglected converted to T2DM in long term. In modern medicine T2DM is a burden upon health care facilities in all countries. The worldwide prevalence of DM has risen dramatically over the past two decades, from an estimated 30 million cases in 1985 to 382 million in 2013. Based on current trends, the International Diabetes Federation projects that 592 million individuals will have diabetes by the year 2035. Several distinct types of DM are caused by a complex interaction of genetics & environmental factors. Depending on the etiology of the DM, factors contributing to hyperglycemia include reduced insulin secretion, decreased glucose utilization, and increased glucose production. In the countries DM is the leading cause of end-stage renal disease (ESRD), non traumatic lower extremity amputations, & adult blindness. It also predisposes to cardiovascular diseases. With an increasing incidence worldwide, DM will be a leading cause of morbidity & mortality in the future. As depicted in our classics addiction to the pleasure of some diets viz., Curds, soup of the flesh of domestic, aquatic and marshy land animals, milk preparations, freshly harvested food particles, freshly prepared alcoholic drinks, preparations of jaggery are responsible for the caution of *Purwarupa of Madhumeha* (Prediabetes) on which a survey based study has been conducted.

**Keywords:** Diet, Prediabetes, Glycosylated Hemoglobin, T2DM

### **INTRODUCTION**

Unlike many other chronic diseases, T2DM is not heralded by a discrete physiologic event

which defines diagnoses; rather it sits at one end of a continuous glucose control spectrum with

normal glucose control at the other. In-between these two boundaries exists a region of abnormal glucose control which is already characterized by concomitant insulin resistance &  $\beta$  – cell dysfunction but does not yet reach the criteria for T2DM[1] is called **Prediabetes** (a stage in which individuals are at greater risk of progressing to T2DM & have an increased risk of cardiovascular diseases) [2]. Those diagnosed with T2DM typically spend an extended period in this region of impaired glucose regulation, sometimes for more than a decade, before progressing to T2DM[3] which is strikingly resemble with the *purwarupa of madhumeha* (a stage in which polydipsia, Burning -sensation in the palm and sole, numbness in palm and sole, Lassitude, etc. are predominant)[4]. The Diabetes Prevention Program (DPP) demonstrated that intensive changes in lifestyle (diet and exercise for 30 min/d five times/week) in individuals with IGT prevented or delayed the development of T2DM when implemented in the stage of **prediabetes** [5] were already inscribed by our classics with the pact [6] which implies looking after our body by means of *Pathyapalana* (Maintenance of proper diet without much more addiction to the pleasure of some diets viz., Curds, soup of the flesh of domestic, aquatic and marshy land animals, milk preparations, freshly harvested food particles, freshly prepared alcoholic drinks, preparations of jiggery) which is the only way of preventing our body from the encroachment of the most devastating metabolic disorder, T2DM. The Research in *Ayurveda* is just searching out the idea about the mechanism of action of the remedies & compelling us to bow down before Acharya Rising Faith & belief in our horizon.

### Demography:

The worldwide prevalence of DM has risen dramatically over the past two decades, from an estimated 30 million cases in 1985 to 382 million in 2013. Based on current trends, the international diabetes federation projects that 592 million individuals will have diabetes by the year 2035 [7].

### Aims and objectives:

To assess the diets consumed in excessive quantity held responsible for Prediabetes.

### Materials and Methods:

A total 60 no. of patients attending OPD of the Institute for Postgraduate Teaching, Gopabandhu Ayurveda Mahavidyalaya & Hospital, Puri were selected irrespective of their sex, caste etc. taking into consideration the inclusion and exclusion criteria.

### Selection Criteria

#### Inclusion Criteria:

##### a) *Purwarupa of Madhumeha* (Prediabetes)

1. *Pipasa* (Thirstiness)
2. *Karapada Daha* ( Burning sensation in the palm and sole)
3. *Karapada Supata* ( numbness in palm and sole)
4. *Alasya* (Lassitude)

##### b) Biochemical Estimation of Prediabetes

1. IFG -100 – 125 mg/dl
2. IGT- 140 – 199 mg/dl
3. HbA<sub>1c</sub> - 5.7 – 6.4 mg/dl

#### Exclusion criteria:

- Pregnant ladies.
- Retinopathy.
- Renal failure.
- Peripheral neuropathy.

- Autonomic neuropathy.
- Infraction/ MI (Myocardial Infarction).
- TIAs (Transient Ischaemic Attacks)

**Laboratory investigation: [8]**

Impaired fasting glucose (IFG), Impaired glucose tolerance (IGT) & HbA1C (Glycosylated

Hemoglobin) have been adopted by WHO as the standard diagnostic criteria for Prediabetes.

**Ethical approval:**

The research protocol was approved by the “Institutional Ethical Committee,” Gopabandhu Ayurveda Mahavidyalaya & Hospital, Puri.

**OBSERVATION AND RESULTS**

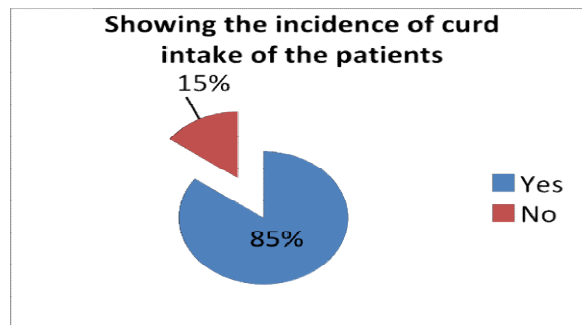
**Table 1:** Showing the incidence of curd intake of the patients N=60

(N= Total no. of patients, f= frequency=No. of patients, %=percentage)

Sl. No.	curd	f	%
1	Yes	51	85
2	No	9	15
<b>Total</b>		<b>60</b>	<b>100</b>

In the study more patients with this disease had the history of taking curd i.e. 51 (85%) in comparison to those who didn’t have the history of

taking curd i.e. 9 (15%). So the curd intake type of ethology Prediabetes is becoming more evident.

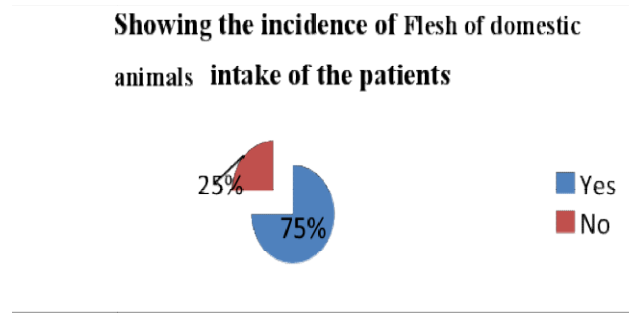


**Table 2:** Showing the incidence of Flesh of domestic animals intake of the patients. N=60

Sl. No.	Flesh of domestic animals	f	%
1	Yes	45	75
2	No	15	25
<b>Total</b>		<b>60</b>	<b>100</b>

From the above table it is resulted that patients taking Flesh of domestic animals were maximally affected by this disease i.e. 45 (75 %) in comparison to patients having no such type of

food habit i.e 15 (25%). From this incidence the Flesh of domestic animals intake type of etiology of Pre diabetes is becoming more evident.

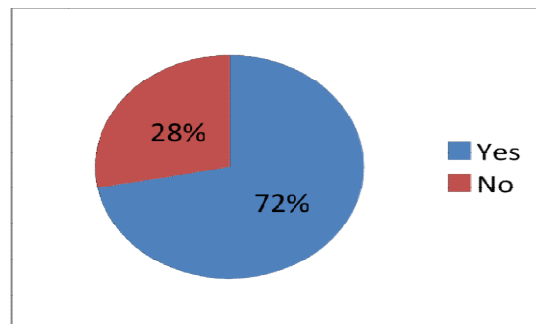


**Table 3:** Showing the incidence of Flesh of aquatic animals intake of the patients N=60

Sl. No.	Flesh of aquatic animals	f	%
1	Yes	43	72
2	No	7	28
<b>Total</b>		<b>60</b>	<b>100</b>

From the above table more patients were taking Flesh of aquatic animals i.e. 43 (72 %) in comparison to those who were not taking i.e. 17

(28%). So the Flesh of aquatic animal intake type of etiology of Prediabetes is becoming more evident.

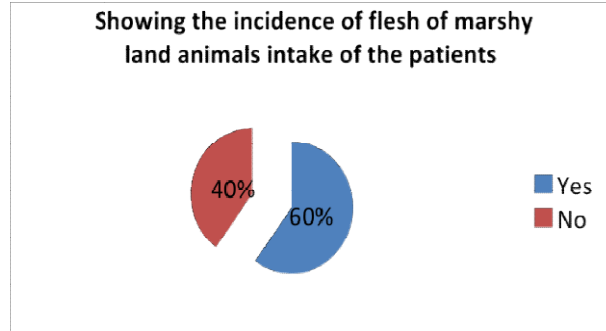


**Table 4:** Showing the incidence of Flesh of marshy land animals intake of the patients N=60

Sl. No.	Flesh of marshy land animals	F	%
1	Yes	36	60
2	No	24	40
<b>Total</b>		<b>60</b>	<b>100</b>

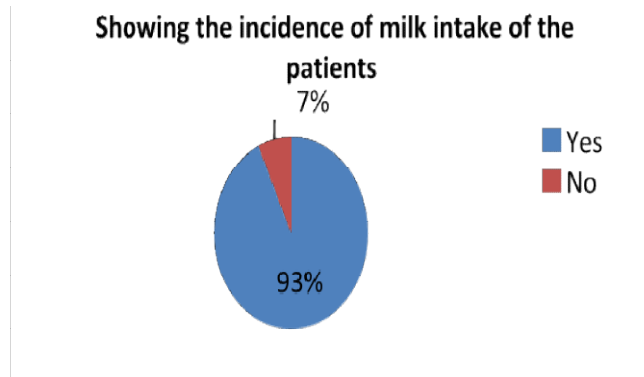
The above table shows that more patients i.e 36 (60 %) had the history of taking Flesh of marshy land animals in comparison to others who didn't have history of taking Flesh of

marshy land animals ie 24 (40 %). So the Flesh of marshy land animals intake type of etiology of Pre Diabetes Is becoming more evident



**Table 5:** Showing the incidence of milk intake of the patients N=60

Sl. No.	Milk	f	%
1	Yes	56	93
2	No	4	7
<b>Total</b>		<b>60</b>	<b>100</b>



From the above table it is evident that maximum no. of patients i.e. 56 (93%) were taking Milk in comparison to those who were not taking i.e.

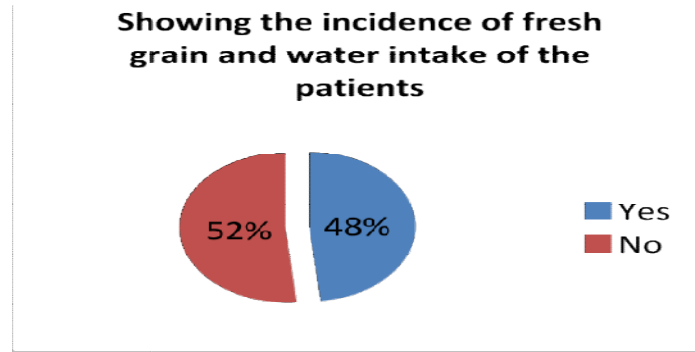
4(7%) in connection to this disease which justifies the Milk Intake type of etiology of Prediabetes.

**Table 7:** Showing the incidence of Fresh grains and water intake of the patients N=60

Sl. No.	Fresh grains and water	f	%
1	Yes	29	48
2	No	31	52
<b>Total</b>		<b>60</b>	<b>100</b>

Above table shows that maximum patients i.e 31 (52%) with this disease were not taking Fresh

grains and water as compared to the others i.e. 29 (48 %).

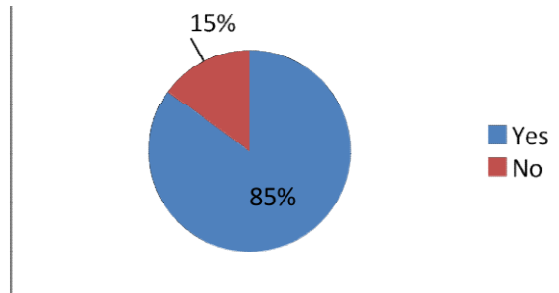


**Table 8:** Showing the incidence of Jaggery/Sugar/ its products like sweets intake of the patients N=60

Sl. No.	Jaggery / Sugar/ its products like sweets	F	%
1	Yes	51	85
2	No	9	15
<b>Total</b>		<b>60</b>	<b>100</b>

From the incidence of Jaggery/ Sugar/ its products like sweets, out of 60 patients, 51 (85 %) patients had the history of Jaggery/ Sugar/ its

products like sweets. But 9 (15 %) patients didn't have such type of history.



## DISCUSSION

### CURD:

In the study more patients had the history of taking curd i.e. 51 (85%) in comparison to those who didn't have the history of taking curd i.e. 19(15%). So the curd) **intake** type of etiology of Prediabetes is established.

### FLESH OF DOMESTIC ANIMALS (Goat, Sheep):

75 % of the patients were taking the above diet followed by 25 % of patients not taking it. So it

is revealed that persons taking flesh of domestic animals are affected by this disease.

### FLESH OF AQUATIC ANIMALS:

More patients were taking Flesh of aquatic animals i.e. 72 % in comparison to those who are not taking i.e. 28 %. So the Flesh of aquatic animals intake type of etiology of Prediabetes is established.

### FLESH OF MARSHY LAND ANIMALS:

60 % of the patients had the history of taking Flesh of marshy land animals in comparison to others who didn't have history of taking Flesh

Of marshy land animals ie 24 (40 %). So the Flesh of marshy land animals intake type of etiology of Pre diabetes is proved.

#### **MILK:**

Maximum no. of patients i.e. 56 % of patients were taking milk followed by 7 % of patient not taking paya. It is evident from the above data milk intake type of etiology of Prediabetes is justified.

#### **FRESH GRAINS AND WATER:**

Maximum patients i.e. 52% are not taking Fresh grains and water as compared to the others i.e. 29 (48%). It is revealed from the study that both the varieties are affected by this disease.

#### **JAGGERY / SUGAR/ ITS PRODUCTS LIKE SWEETS:**

From the incidence of Jaggery/ Sugar/ its products like sweets, out of 60 patients, 85 % patients had the history of taking Jaggery / sugar/ its products like sweets But 15 % patients didn't have such type of history. So it is evident that Jaggery/ Sugar/ its products like sweets intake type of etiology of Pre Diabetes Is justified.

#### **SUMMARY**

Basing on the selection of patients, above depicted diagnostic criteria viz., IFG, IGT HbA1c were availed in which 60 no of patients of prediabetes were registered for the survey. T2DM is not heralded by a discrete physiologic event which defines diagnoses; rather it sits at one end of a continuous glucose control spectrum with normal glucose control at the other. In-between these two boundaries exists a region of abnormal glucose control which is already characterized by concomitant insulin resistance &  $\beta$  – cell dysfunction but does not yet reach the criteria for T2DM. It was evident from the survey that individuals addicted to the pleasure of Curds, soup of the flesh of domestic, aquatic or marshy land animals, milk, Fresh

grains and water, preparations of Jaggery / Sugar/ its products like sweets were encroached by the devastating prediabetes. If successful management schedule is implemented in the process of consequence of insulin resistance syndrome, individual will get rid of its influence which has been inscribed from modern & classical point of view.

#### **CONCLUSION**

Unhealthy lifestyle and Prediabetes are inextricable linked, with the former being the primary causal agent of the latter. Unhealthy lifestyle practices attributable to modern industrialized environments have been shown to account for most of the cases of Prediabetes. Observational survey has suggested that overall dietary patterns are one of the important considerations. For example, addiction to the pleasure of some diets viz., Curds, soup of the flesh of domestic, aquatic and marshy land animals, milk preparations, freshly harvested food particles, freshly prepared alcoholic drinks, preparations of jaggery [8] are responsible for the caution of Prediabetes (Purwarupa of Madhumeha). On the other hand those consuming a prudent diet (intake of whole grain cereal, vegetables, legumes, low-fat dairy products, nuts, seeds, fish, and poultry), have a lower risk of Prediabetes.

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