AN EPIDEMIOLOGICAL STUDY ON PREVALENCE OF MADHUMEHA W.S.R. TO DIABETES MELLITUS AMONG RURAL POPULATION OF KEMMANNU GRAM PANCHAYATH

K. Samudrudu[1]*, Vijay B. Negalur [2], Srinidhi Dhanya B. S.[3] and Sandesh Kumar Shetty[4]

[1]PG Scholar, Dept. of Swasthavritta, SDM College of Ayurveda, Udupi.

[2]HOD and Professor, Dept of Swasthavritta, SDM College of Ayurveda, Udupi.

[3]Asst. Prof., Dept of Swasthavritta, SDM College of Ayurveda, Udupi.

[4]Associate Professor, SDM College of Ayurveda, Udupi.

*Corresponding Author

Dr. K. Samudrudu

PG Scholar, Dept. of Swasthavritta, SDM College of Ayurveda, Udupi.

ABSTRACT

Title: "An Epidemiological study on prevalence of Madhumeha W.S.R. to Diabetes Mellitus among rural population of Kemmannu Gram Panchayath" **Background and Objectives:** In the present scenario the life style disorders are the burning problem all over the world. Diabetes Mellitus is becoming the fastest considerable disease in World wide. India is being estimated with fastest growing population of Diabetes Mellitus due to improper life style. So the study was taken with following objectives: (1) To study the prevalence of *Madhumeha* among the population of Kemmannu Gram panchayath. (2) To study the risk factors of *Madhumeha*. **Methodology:** The data was collected by using pre structured and pretested questionnaire of Diabetes self-management questionnaire of *Ayurveda* questionnaire on *Madhumeha* with *Madhumeha* Assessment Tool (MAT) of Ministry of AYUSH, Government of India (GOI). Cross sectional study with the sample size 210 from the study population were selected by random sampling technique by house to house visit. Fasting Blood Sugar is greater than 126mg/dl or the subject were diagnosed and taking oral hypoglycemic agents are considered as Diabetes Mellitus. The data was analyzed by using SPSS.20 **Results:** The prevalence rate of Madhumeha (Diabetes Mellitus) in the rural population of Kemmannu Gram Panchayath Udupi district Karnataka was 23.3%. **Interpretation and Conclusion:** Among 210 subjects 49 were diagnosed with diabetes mellitus, diagnosis was included new cases and already known cases of Diabetes Mellitus.

The prevalence of Diabetes Mellitus is 23.3%. Most of the people with more than 45 years age group were affected. It is more affected in moderate and heavy workers, due to life style and stress in them.

KEYWORDS: Madhumeha, Diabetes Mellitus, Life style changes, Epidemiology and Prevalence.

INTRODUCTION

Ayurveda is a science of life. The word *Ayurveda* comprises of two words *Ayu* and *Veda*, the word *Ayu* means Life and *Veda* means Knowledge. Shabdakalpadruma explains the word meaning of *Ayurveda* as, through which a person is able to improve one's own life span.[1] *Ayurveda* explains about *Hitaayu* (Beneficial to life), *Ahitaayu* (Non beneficial to life), *Sukhayu* (Joyful status of body and mind) and *Dukhayu* (Miserable status of body and mind).[2] The main aim of *Ayurveda* is to maintain *Dharma* (virtuous acts), *Artha* (Wealth), *Kama* (Desire) and *Moksha* (Salvation).These are considered as *Purushartha Chatustaya* which are essential for health.[3] The objective of *Ayurveda* is to maintain the health of an individual and curing the disease.[4] It mentions the condition free from the disease is *Swastha* (Helathy) and the regimens followed to keep oneself healthy is *Swasthavritta*.[5] In order to prevent and promote the health, *Ayurveda* explains various regimens like *Dinacharya* (daily regimen), *Ratricharya* (night regimen) *Ritucharya* (seasonal regimens) and *Sadvritta* (Code of good conduct) etc. *Swasthavritta* principles are the ideal principles in order to overcome the life style disorders which are caused by improper *Ahara* and *Vihara.*

In the present scenario the life style disorders are the burning problem all over the world. Diabetes Mellitus is becoming the fastest considerable disease in World wide. India has being estimated with fastest growing population of Diabetes due to improper life style.

The World Health Organization estimated the global prevalence of Diabetes among adults over 18 years of age as 8.5% in 2014. As per the National Diabetes and Diabetic Retinopathy Survey report released by the Health and Family Welfare Ministry prevalence of diabetes in India in the last four years is found to be 11.8%.

Definition of *prameha*

Prameha is a disease of *Mutravaha Sroto Vikara* (improper work of Urinary system). It can be defined on the basis of its common signs and symptoms, they are.

तत्राविलप्रभूतमूत्रलक्षणाः सर्व एव प्रमेहा भवन्ति ‖[6]

The disease which is manifested with the frequent and copious micturition along with turbidity is known as *Prameha*.

Madhumeha

Madhumeha is a clinical entity in which the patient voids *Mutra,* having the similar qualities of *Madhu* like its colour, taste, smell or appearance.

सर्व एव प्रमेहा मूत्रादिमाधुर्ये मधुगन्धसामान्यात् पारिभाषिकीं मधुमेहाख्यां लभन्ते ‖[7]

Classification

Acharya Charaka and *Acharya Sushruta* had described the involvement of all Three *doshas* in the pathogenesis of *Prameha.*[8] Further, the *Acharyas* have classified *Prameha* into different types. According to *Charaka*, *Prameha* is of 20 types with the specific character acquired by *Mutra* due to special and specific combinations between aggravated qualities of *doshas*. *Acharya Vagbhata* and *Sushruta* have opined the same.

Out of 20 types, 10 belong to *Kaphaja* category, 6 are of *Pittaja* type and remaining 4 come under *Vataja* variety.

According to body constitution – Sthula and Krisha

Charaka has described two types of *Pramehi* according to their body constitution as *Sthula Pramehi* and *Krisha Pramehi*.

स्थूलः प्रमेही बलवानिहैकः कृशस्तथैकः परिदुर्बलश्च|[9]

Body Constitution can give clue regarding the origin of disease as *Santarpanajanya* or *Apatarpanajanya*. This classification is important because the line of treatment is different for both *Sthula Pramehi* and *Krisha Pramehi*.

According to origin of disease

Prameha can be classified as

➢ *Sahaja Prameha*
➢ *Apathyanimittaja Prameha*

Nidana
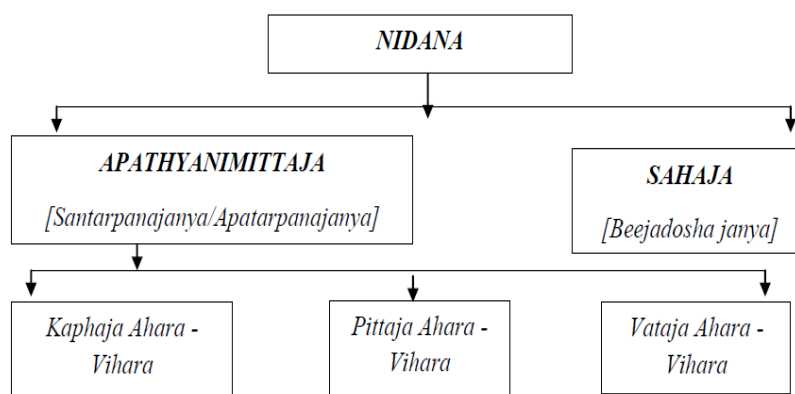
Apathyaimittaja nidana

1) Samanya nidana

These are the *Samanya nidanas* for *Kaphaja prameha* and gradually turn into *Pittaja* and *Vataja* variety of *Prameha*.

Etiological factors which are commonly responsible for *Prameha* i.e. *Samanya nidana* of *Prameha*, are described by *Acharya Charaka* in *Chikitsasthana*[10] as

a) *Asyasukham*- Interest in sedentary habits.

b) *Swapnasukham*- Pleasure of sleep.

c) *Dadhini*- Overindulgence of various preparations of curds.

d) *Gramya, audaka, anoopa rasa*- soups of meat of domesticated and aquatic animals belonging to marshy land.

e) *Payansi*- Various milk preparations.

f) *Navannapanam*- Freshly harvested food articles, freshly prepared drinks.

g) *Guda vaikritam*- Various preparations of jaggary.

All these factors are responsible for the aggravation of *Kapha* and can cause the *Prameha*

Nidana **of** *avaranajanya madhumeha*

Acharya Charaka in *Sutrasthana* described the causative factors and specific Etiopathogenesis responsible to evolve *Avaranajanya madhumeha*[11] as intake of excessive *Guru, snigdha, amla, lavana ahara*, intake of excess amount of food, (newly harvested food) *Navanna* and *Navapaana* (intake of freshly prepared alcohol), (having excessive sleep) *Atinidra* and sedentary habits like (giving up of thinking) *Achinta* and (giving up of physical exercise) *Tyakta Vyayama* and avoidance of *Samshodhana*

Chikitsa aggravates *Pitta* and *Kapha dosha, Meda* and *Mamsa dhatu*.

These *Santarpanajanya Hetus* [i.e.factors causing Over Nourishment] will produce the disease *Madhumeha.*

Purvarupa

In *Prameha*, normal metabolism of the body is widely hampered. Its pathogenesis is such that in spite of rich supply of nutrients, the body is deprived of them. Due to defective metabolism, bi-products formed in this are not used by the body, on the contrary, they are harmful if get accumulated in the body. So, body's natural process is to remove them and enhances the excretion of *malas* in *Atimatra* i.e. waste products get secrete out in excess. This gives rise to *Purvarupa* and finally to *Rupa* of *Prameha*.

Rupa

Sushruta has classified *Prameha* as

1. *Sahaja,* and

2. *Apathyanimittaja* [*Santarpanaja and Apatarpanaja*].

Further he has described their physical constitution as[12]

Classification of prameha based on physical constitution

Sahaja	*Apathyanimittaja*
• *Krisha* [cachectic] • *Ruksha* [dryconstitution] • *Alpashi* [consuming lessamount of food] • *Bhrisha pipasu* [havingpolydipsia] • *Parisaranasheela*	*Sthula* [obese] *Snigdha* [having goodluster] *Bahvashi* [consuminglarge amount of food] *Shayyasana swapnasheela* [interested in sedentary lifestyle and sleepy]

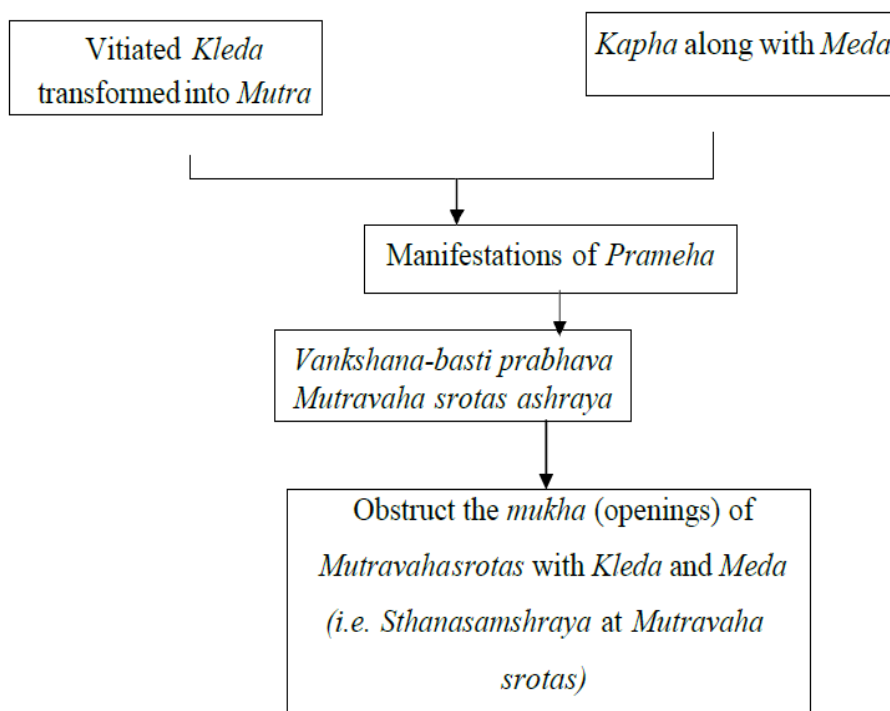### Cardinal signs i.e. samanya rupa

तत्राविलप्रभूतमूत्रलक्षणाः सर्व एव प्रमेहा भवन्ति ॥

सामान्यं लक्षणं तेषां प्रभूताविलमूत्रता।

Two cardinal signs of *prameha* are

1. *Prabhuta mutrata*

2. *Avila mutra*ta

Samprapti

Specific *doshaja* **type of** *sadhyasadhyata*

	Prameha Type	*Prognosis*	*Reason*
1.	*Kaphaja* 10 varieties	*Sadhya* (Curable)	*Samakriyatvat*
2.	*Pittaja* 6 varieties	*Yapya* (Palliable)	*Vishamakriyatvat*
3.	*Vataja* 4 varieties	*Asadhya* (Incurable)	*Mahatyayatvat*

Chikitsa

Madhumeha is *Yapya Vyadhi*. This indicates that long lasting nature of the disease. Treatment of *Prameha* requires to manage many factors i.e. *Amshamsha ghatakas* at each stage of the disease. Treatment of the disease should be carried out in such a way that it must not give rise to another disease.[13]

Chikitsa sutra

Prameha has two constitutions *Sthula* and *Krisha* and its Line of treatment varies accordingly.

स्थूलः प्रमेही बलवानिहैकः कृशस्तथैकः परिदुर्बलश्च|

सम्बृंहणं तत्र कृशस्य कार्यं संशोधनं दोषबलाधिकस्य||[14]

1. *Krisha pramehi*

People who are having thin body constitution and who are weak, must be nourished.

Status of *agni* must be taken consideration. Things that will improve patient's condition but will not contribute to the pathogenesis of the disease by their *brimhana* nature should be given.[55]

2. *Sthula* and *Balawan pramehi*

In the patients who are strong and who are having *doshas* in excess quantity, *Shodhana Chikitsa* must be carried out.

METHODOLOGY
Source of data
Age group of 30-60 years among the population of Kemmannu Gram Panchayath of Udupi Taluk and district, Karnataka state were taken for the study. For this permission from Kemmannu Gram Panchayath has been taken.

Method of collection of data
The data was collected by using pre structured and pretested questionnaire of Diabetes self-management questionnaire of *Ayurveda* questionnaire on *Madhumeha* with *Madhumeha* Assessment Tool (MAT) of Ministry of AYUSH, Government of India (GOI).

The data of 210 subjects fulfilling the inclusion criteria were selected randomly from the Kemmannu Gram Panchayath of Udupi Taluk and district, Karnataka state and data was collected by personal interview with a questionnaire method.

Inclusion criteria
➢ Individuals aged between 30 - 60 years.
➢ All who are willing to participate in the study, irrespective of their present Health Condition and treatment, will be included.

Exclusion criteria
➢ Person who is not ready to give consent.

Diagnostic criteria
➢ Fasting Blood Sugar: ≥126mg/dl or the subject were diagnosed and taking oral hypoglycemic agents.

Observations

In this Survey study, 210 people fulfilling inclusion and exclusion criteria were registered. The following are the observations extracted from the sample.

Out of 210 people apparently healthy individuals were 66.7% and persons with Diabetes Mellitus signs and symptoms were 33.3%. People with Sedentary life style were 30.5%, Light working people were 17.1%, moderately working persons were 35.2%, Heavy working people were 16.2% and strenuous working people were 1.0%. Persons 4-5 times Micturating at day were 29.5%, 6-7 times Micturating at day were 47.1%, 8-9 times Micturating at day were 23.3%. Persons 0-1 time Micturating at night were 49.5%, 2-3 times Micturating at night were 47.1%, 4-5 times Micturating at night were 3.3%.

Out of 210 subjects 71% were more than 45years age and 29% were less than 45 years of age. 65.7% were not having the family history of diabetis mellitus and 34.3% were having family history of diabetis mellitus. 78.1% were not having sedentary life style and 21.9% had sedentary life style. 56.2% were not increasingly gaining their weight and 43.8% were increasingly gaining their weight. 51.0% were not feeling that their work capacity is reduced recently 49.0% were feeling that their work capacity is reduced recently. 65.7% were not feeling the flabbiness of body –parts and 34.3% were feeling the flabbiness of body –parts. 59.0% were not feeling tired, exhausted and sleepy always and 41.0% were feeling tired, exhausted and sleepy always. 49.0% were not feeling increased thirst and dryness of mouth – palate- throat and 51.0% were feeling increased thirst and dryness of mouth – palate- throat. 63.8% were not regularly waking up late in the morning and / or having the habit of sleeping in day time and 36.2% were regularly waking up late in the morning and / or having the habit of sleeping in day time. 67.1% were not regularly eating sweets, Maida, junk food, Canned fruit juices, cold drinks etc. and 32.9% were regularly eating sweets, Maida, junk food, Canned fruit juices, cold drinks etc.

RESULTS

Among 210 Sample size, 161 were non diabetic and 49 were found to be Diabetic (people with newly diagnosed and known case of diabetes mellitus). The prevalence rate was 23.3%.

Diagnosis

■ Frequency   ■ Percent
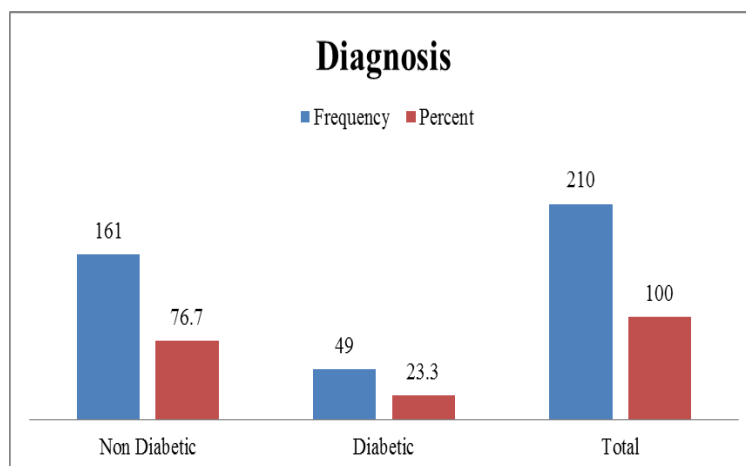
149 people were above 45 years and 61 were below 45 years. Among 149 subjects (above 45 years), 107 were non diabetic and 42 were diabetic. Among 61 subjects (below 45 years), 54 were non diabetic and 7 were diabetic. Among 138 people without family history of diabetes, 115 were non diabetic and 23 were diabetic. Among 72 people with family history of diabetes, 46 were non diabetic and 26 were diabetic. Among 210 subjects, 121 felt no excessive Sweating and bad odour from the body recently and 89 felt excessive Sweating and bad odour from the body recently. Among 121 subjects with no excessive Sweating, 100 were non diabetic and 21 were diabetic. Among 89 subjects with excessive Sweating, 61 were non diabetic and 28 were diabetic. Among 210 subjects, 167 people were not consuming alcohol 4 times a week and 43 were consuming alcohol 4 times a week. Among those 167 subjects, 135 were non diabetic and 32 were diabetic. Among 43 subjects with regular alcohol intake, 26 were non diabetic and 17 were diabetic. Among 210 subjects, 104 were not waking up at night for urine and 106 were waking up at night for urine. Among 104 subjects, 96 were non diabetic and 8 were diabetic. Among 106 subjects who wake up, 65 were non diabetic and 41 were diabetic. Among 210 subjects, 137 noticed no recent abnormality in the urine and 73 noticed recent abnormality in the urine. Among 137 subjects without recent abnormality in the urine, 122 were non diabetic and 15 were diabetic. Among 73 subjects with recent changes in the urine, 39 were non diabetic and 34 were diabetic. Among 210 subjects, 158 were less than the mentioned waist circumference and 52 were greater than the mentioned waist circumference. Among 158 subjects, 128 were non diabetic and 30 were diabetic. Among 52 subjects, 33 were non diabetic and 19 were diabetic. Among 210 subjects, 142 were with low BMI, (i.e. less than 25) and 68 were with more BMI (i.e. greater than 25). Among 142 subjects, 116 were non diabetic and 26 were diabetic. Among 68 subjects, 45 were non diabetic and 23 were diabetic.

Among 210 subjects the Minimum FBS range is 60 mg/dl and the Maximum FBS range is 410 mg/dl and the mean between the ranges is 127.0667.

DISCUSSION

Prameha is considered as one among the *Ashtamahagada.* As per *Acharyas* when *Prameha* is not treated or ill-treated that turns into *Madhumeha* so the *Prameha* turns into *Madhumeha* when it is not treated or ill-treated.

The *Samprapti* of *Prameha* begins with *Kapha pradhana tridosha dusti* with predisposing factors such as *Sharira shaitilya*. The *Vruddha meda* and *Kapha* in the presence of *Kleda* and *Shitila mamsa* blends together and the whole combination is dragged to *Basti* which is expressed as *Prabhuta avila mutrata*. *Prabhutata* may be in terms of quantity or frequency or both whereas *Avila mutrata* is the turbidity seen in the *Mutra* due to the expression of *Dosha* and *Dushya*. *Prameha* is classified into 3 categories mainly on the basis of *Doshas*. They are 20 in number among 10 are *Kaphaja* variety, 6 are *Pittaja* variety and 4 are *Vataja* variety of *Pramaeha.*

Intake of excess *Guru, Snigdha, Amla, Lavana rasa pradhana Ahara, Ati nidra, Navannapana, Asyasukha* are leading to *Meda, Mamsa, Shleshma* and *Pitta Vriddhi.* The path of *vata* is obstructed there by the *vata* together with *ojus* comes down to reach the *basti* causing an obstinate type of disease called *Madhumeha.* In recent days most of the people following sedentary life styles and food habits which is having direct relation to *Madhumeha.* So, the disease *Madhumeha* is very important.

The above 45 years age group is carries more number of diabetic patients. As per the results among 49 people of diagnosed 7 were below 45 years and 42 were above 45 years age. It shows that, above 45 years of age group is more prone for the diabetes mellitus. Among 49 people of diagnosed 23 are with no family history and 26 had family history. It shows that the persons with family history were diagnosed more than no family history. It clearly shows that the disease is runs in familial. As per the results among 49 people of diagnosed, 15 were not had high blood glucose and 34 were found high blood glucose. It tells that more people were diagnosed during an illness or during pregnancy. It shows that the illness may be an indication of the disease occurrence. But gestational diabetes will laps by delivery. But in some persons it continues even after delivery. In this study all persons had Diabetes during illness and gestational period is continued. As per the results among 49 people of diagnosed

19 were not increasing weight and 30 were increasing the weight. That depicts that people with increasing weight were most diagnosed with diabetes mellitus. This is also a risk factor to this disease. More weight people have increased *Meda dhatu* by which the all other *Dhatus* get vitiation and the disease gets manifested. As per the results among 49 people of diagnosed 18 people work capacity is not reduced and 31 people work capacity is reduced. Results show that most of the people were feeling reduced work capacity. By the *Dhatu dushana, Anga shaitilyata* takes place so definitely person feels tiredness early. As per the results among 49 people of diagnosed 22 are not feeling flabbiness and 27 were feeling flabbiness of body – parts. Flabbiness of the body – parts also a sign of the diabetes, which occur due to *Kapha dosha dusti* and in turn *Dravata* of *Dhatus*. By that *Prabhutaavila mutrata* takes part and all *Dhatus* will expel out from the body through Micturition. With this the flabbiness of body – parts can be seen in diabetic persons. among 49 people of diagnosed 17 are not feeling 32 were feeling tired, exhausted and sleepy. This occurs due to increased *Meda dhatu* and *Kapha dosha.* among 49 people of diagnosed 21 were not felt and 28 were felt excessive sweating and bad odour. This is because of increased *Meda dhatu* and *Kapha dosha.* As per the results among 49 people of diagnosed 16 were not felt and 33 were felt dryness of mouth – palate-throat. This is due to excessive expulsion of dhatus from the body through Micturition person feel more thirst. As per the results among 49 people of diagnosed 28 were not waking up late and 21 were waking up late and/ or have habit of sleeping in day time. This is a faulty life style which affects a person and increases the chronicity of disease. Among 49 people of diagnosed 36 were not had, 13 were had habit of eating maida, junk etc. This faulty life style is a risk factor of Diabetes Mellitus. Among 49 people of diagnosed 32 were not consumes and 17 are consumes more alcohol. The excess alcohol intake is a faulty life style which in turn becomes a cause for Diabetes Mellitus. As per the results among 49 people of diagnosed 37 are not feeling and 12 were feeling increased sliminess / stickiness in body, discharge in the eyes, wax collection in ears, coating over teeth / tongue. This occurs because of *Meda dhatu vriddhi* and *Dasha dushana* of *Dhatus.* among 49 people of diagnosed 8 are not wake up and 41 were wake up at night for urine. The nocturia is a common symptom of diabetes mellitus. Because in the night time body will be in rest position the production of wastes will be more at this time so the nocturia is seen in most of the diagnosed persons. As per the results among 49 people of diagnosed 34 was noticed abnormality in their urine. This is due to expulsion of *Rasadi dhatus* from the body through Micturition. among 49 people of diagnosed 30 persons waist circumference is less than described and 19 were with more than described. Increase in waist circumference leads more fat deposition in the abdominal and

lower abdominal region. This is also a risk factor and predisposing factor for diabetes mellitus. among 49 people of diagnosed 26 persons BMI is less than described and 23 persons BMI is more than described. This shows increase in BMI will increases the risk of diabetes mellitus. It is a risk factor for diabetes.

In this study the risk factors like sedentary life style, alcohol consumption, eating junk foods, waking up late in the morning, sleeping at day time, increased waist circumference and increased BMI were studied. To avoid Diabetes Mellitus one has to avoid these risk factors.

In this study 23.3% prevalence of Diabetes Mellitus in Kemmannu Gram Panchayath was observed. As per Nation wise prevalence study of Diabetes Mellitus in rural area was 16% in Karnataka 2014. In span of 8 years the prevalence rate of Diabetes Mellitus increased around 7%. The reason may be increased population, improper food consumption and following faulty life style.
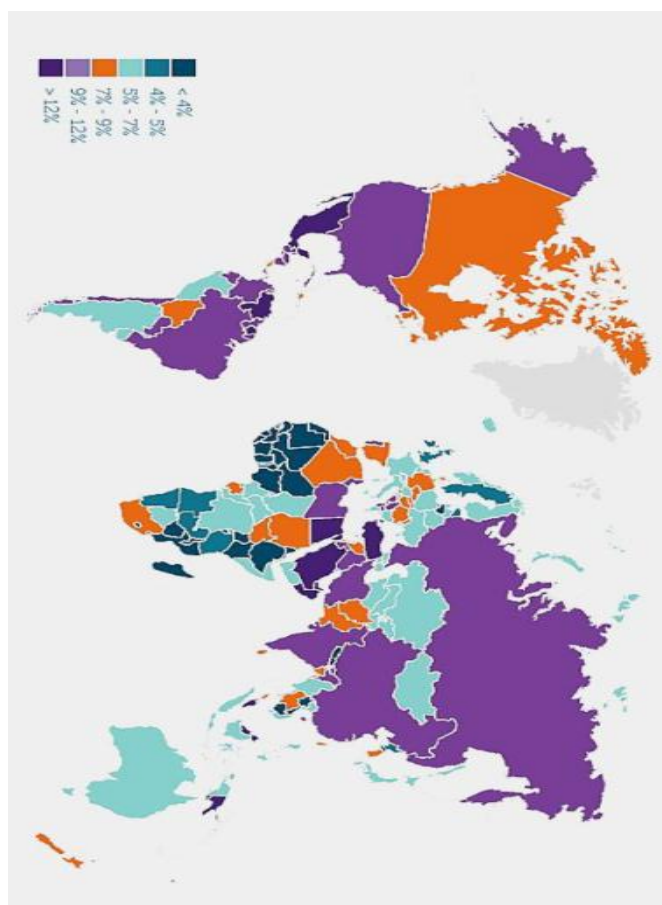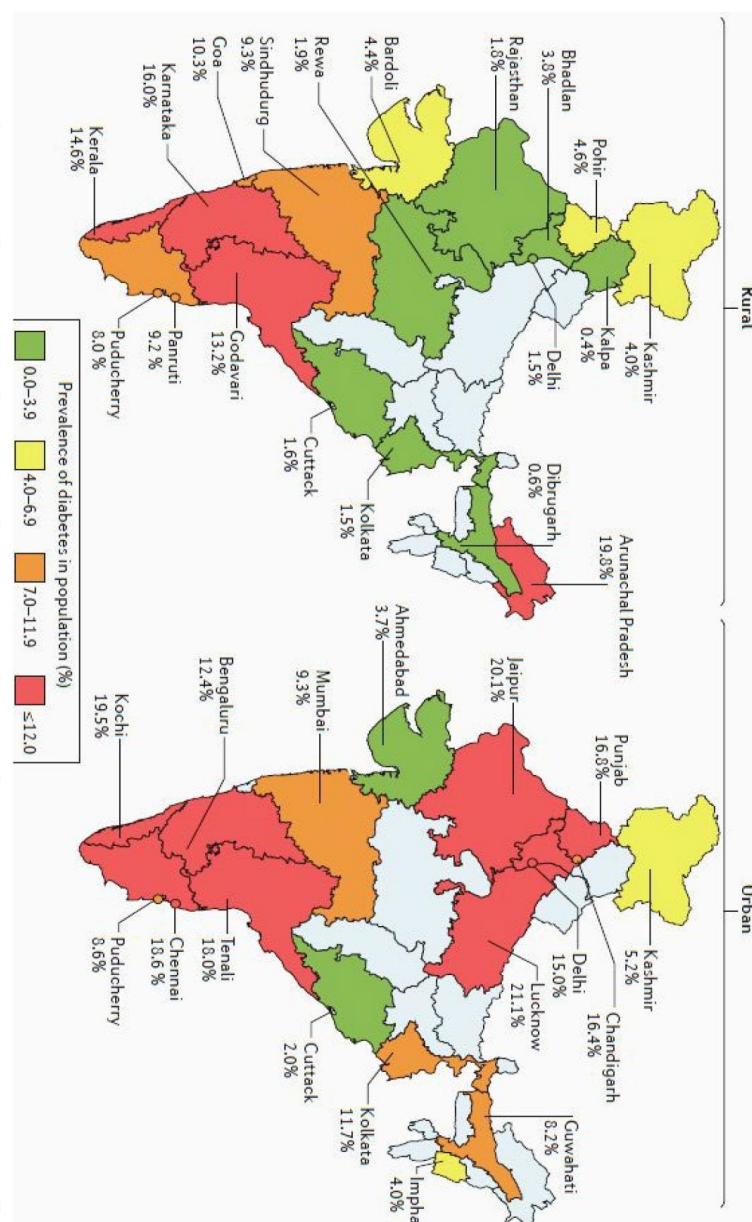

Figure no. 1: Estimated Global Prevalence (Age adjusted) of Diabetes in adults (20-79 years), 2015.

Figure 2: The prevalence of diabetes mellitus in rural and urban populations in India in 2014 [6]

CONCLUSION

Survey study of Epidemiological Study on Prevalence of *Madhumeha* W.S.R. to Diabetes Mellitus was conducted in Rural Population of Kemmannu Gram Panchayath of Udupi, Karnataka. The conclusions drawn on the basis of study are as follows:

- Total sample size was 210 from the age group 30-60 years.
- Among 210 subjects 49 were diagnosed with Diabetes Mellitus, this diagnosis was included new cases and already known cases too.
- Most of the people with more than 45 years age group were affected.
- Out of 210 people 27 males and 22 females were diagnosed as Diabetes Mellitus.

- Most of the people with recent weight gain were affected, reduced work capacity people were affected more, sedentary life style, alcohol consumption, eating junk foods, waking up late in the morning, sleeping at day time which are the major risk factor for Diabetes Mellitus.

- It is more affected in moderate and heavy workers, due to life style and stress in them.

- The prevalence of Diabetes Mellitus is 23.3%

- From this study the conclusion was drawn that, it is necessary to do the health education regarding the Diabetes Mellitus.

- The community should be aware about the risk factors and complications of Diabetes Mellitus.

The best way to prevent Diabetes Mellitus is – follow *Swasthavritta* Principles like *Dinacharya, Ratricharya, Ritucharya, Hita* and *Mita Pathya Ahara sevana, Achara Rasayana* and *Sadvritta Palana.*

Yoga and *Pranayama* can be adopted for the Primary Prevention of the Disease.

REFERENCES

1. Sri varadaaprasada, Sri Haricharana, editor, Shabdakalpadruma of Radhakantadeva, Delhi: Nag Publishers, 1987; 1: 186.

2. Acharya YT, editor, Ayurveda Dipika Commentary of Chakrapanidatta on Charaka Samhita of Agnivesha, Sutra Sthana; Dheerganjeeviteeyam Adhyaya: Chapter. Varanasi: Choukambha Publications, 2020; 8: 1 – 41.

3. Acharya YT, editor, Ayurveda Dipika Commentary of Chakrapanidatta on Charaka Samhita of Agnivesha, Sutra Sthana; Deerghamjeevitiyam Adhyaya: Chapter. Varanasi: Choukambha Sanskrit Sansthan, 2014; 6: 1 – 15.

4. Acharya YT, editor, Ayurveda Dipika Commentary of Chakrapanidatta on Charaka Samhita of Agnivesha, Sutra Sthana; Arthe Dasha Mahamooliya Adhyaya: Chapter Varanasi: Choukambha Sanskrit Sansthan, 2014; 187: 30 – 26.

5. Acharya YT, editor, Ayurveda Dipika Commentary of Chakrapanidatta on Charaka Samhita of Agnivesha, Sutra Sthana; Deerghamjeevitiyam Adhyaya. Varanasi: Choukambha Sanskrit Sansthan, 2014; 19: 1 – 67.

6. Acharya Y.T, Acharya N.R., editor, Nibadhasangraha Commentary of Dalhanacharya, Nyaya Chandrika Panjika Commentary of Gayadasacharya on Susrutha Samhitha of

Susrutha, Nidana sthana; Prameha Nidanam Adhayaya: Varanasi: Choukambha Sanskit Sansthan, 2010; 1: 290.

7. Acharya Y.T, Acharya N.R., editor, (1st ed.). Nibadhasangraha Commentary of Dalhanacharya, Nyaya Chandrika Panjika Commentary of Gayadasacharya on Susrutha Samhitha of Susrutha, Chikitsa sthana; Prameha Pidaka Chikitsitam Adhayaya:Chapter Varanasi: Choukambha Sanskit Sansthan, 2010; 454: 12 - 06.

8. Acharya YT, editor, (1st ed.). Ayurveda Dipika Commentary of Chakrapanidatta on Charaka Samhita of Agnivesha, Nidana Sthana; Prameha Nidanam Adhyaya: Varanasi: Choukambha Sanskrit Sansthan, 2013; 211: 4 – 3.

9. Acharya YT, editor, (1st ed.). Ayurveda Dipika Commentary of Chakrapanidatta on Charaka Samhita of Agnivesha, Chikitsa Sthana;Prameha Chikitsitam Adhyaya Varanasi: Choukambha Sanskrit Sansthan, 2013; 446: 6 – 50.

10. Acharya YT, editor, (1st ed.). Ayurveda Dipika Commentary of Chakrapanidatta on Charaka Samhita of Agnivesha, Chikitsa Sthana; Prameha Chikitsitam Adhyaya Varanasi: Choukambha Sanskrit Sansthan, 2017; 445: 6 – 4.

11. Acharya YT, editor, (1st ed.). Ayurveda Dipika Commentary of Chakrapanidatta on Charaka Samhita of Agnivesha, Sutra Sthana; Keeyantah Shiraseeyam Adhyaya: Varanasi: Choukambha Sanskrit Sansthan, 2017; 17: 78-80, 103-04.

12. Acharya Y.T, Acharya N.R., editor, (1st ed.). Nibadhasangraha Commentary of Dalhanacharya, Nyaya Chandrika Panjika Commentary of Gayadasacharya on Susrutha Samhitha of Susrutha, Chikitsa sthana; Prameha Chikitsitam Adhayaya: Chapter. Varanasi: Choukambha Sanskit Sansthan, 2010; 451: 11 – 3.

13. Acharya YT, editor, (1st ed.). Ayurveda Dipika Commentary of Chakrapanidatta on Charaka Samhita of Agnivesha, Nidana Sthana; Apasmara Nidanam Adhyaya: Chapter Varanasi: Choukambha Sanskrit Sansthan, 2013; 228: 8 – 23.

14. Acharya YT, editor, (1st ed.). Ayurveda Dipika Commentary of Chakrapanidatta on Charaka Samhita of Agnivesha, Chikitsa Sthana; Prameha Chikitsitam Adhyaya: Chapter Varanasi: Choukambha Sanskrit Sansthan, 2007; 446: 6 – 15.