INTERNSHIP TRAINING

At

NATIONAL HEALTH MISSION, GUJARAT

MINISTRY OF HEALTH & FAMILY WALEFARE , Gujarat

By

Ms. Mohini Ranjan

Post Graduate Diploma in Health Management

2014-16

International Institute of Health Management and research, New Delhi

To Whomsoever It May Concern

This is to certify that Ms. Mohini Ranjan, student of Post Graduate Diploma in Health Management (PGDHM) from international Institute of Health Management Research, New Delhi has undergone Internship training atNational Health Mission Gujarat, from February, 2016 to May, 2016.

The candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical. The Internship is in fulfilment of the course requirements.

I wish her all success in all her future endeavours.

Dr. A.K. Agarwal

Dean, Academics and Student Affairs

IIHMR, New Delhi

Dr.Preetha GS.

IIHMR, New Delhi

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titledArvalli district of district Gujarat and submitted by Ms. Mohini Ranajn S tudy on the Prevelance diabetes and diabetes induced complication of Arvalli district. National Health Mission Gujarat (NHM)in. Mohini Ranjan Enrolment No. PG/14/034 under the supervision of Dr.Preetha Unni for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from February2016to May2016 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature

Date

NHM, District Health Society
District Programme Management Unit
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Certificate from Dissertation Advisory Committee

This is to certify that **Ms. Mohini Ranjan,** a graduate student of the **Post-Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. She is submitting this dissertation titled **"in Prevalence of diabetes and diabetes inducedComplications in Arvalli District of Gujarat "** at "**National Health Mission**" in partial ful fillment of the requirements for the award of the **Post-Graduate Diploma in Health and Hospital Management.**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report

Dr. Preetha GS
Associate Professor
IIHMR New Delhi

Dr. Amarnath Verma
Chief District Health Officer
National Health Misson

N.H.M. GUJARAT

(District Health Society, District Programme Management Unit DPMU) Arvalli , District Panchyat Arvalli, Gujarat

The Certificate is awarded to

Ms. Mohini Ranjan

In Recognition of having successfully completed her internship at

NHM Arvalli, Gujarat

And has successfully completed her project on

study on prevalence of diabetes and diabetes induced complications in Arvalli district.

She came across as a committed, sincere and diligent person who has a strong drive and zeal for learning.

We wish her all the best for future endeavours.

District Programme Officer

District Panchyat Arvalli

Chief District Health Officer

For **District Panchyat Arvalli**

NHM District Health Society
District Programme Management Unit
(Health Branch) District Panchayat Modasa
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FEEDBACK FORM

Name of the Student: Mohini Ranjan

Dissertation Organisation: National Health Mission, Gujarat

Area of Dissertation: Prevalence of Diabetes

Attendance: 100%

Objectives achieved:

- **Participated in Cold Chain Training, RMNCH+A Workshop & Supportive supervision of supervisor conducted by UNICEF.**
- **Active participation in training for Asha worker for understanding work of Asha working module 5, 6 & 7.**
- **Worked as a District level supervisor for monitoring of pulse polio round.**
- **Organized District level work shop of NIPI.**
- **Attained video conference for shift of t-opv- bopv**
- **A 2-days workshop on Planning and Monitoring of SBCC interventions with special focus on Routine Immunization.**

Deliverables:

- **As a DPC Coordinated deliverables of all national programmes and timely reporting to higher authorities**
- **Supervisory visit of PHI (Peripheral Health Institutions)**
- **Supportive supervision of Mamta session.(Village health and Nutrition day)**
- **Organized Governing body & Executive body meetings of District Health society MDR AND DLVMC etc.**
- **Actively participated in maternal death review committee meeting.**

Strengths:

- **Hard working and sincere**
- **Always complete task with full dedication**
- **Good analytical and communication skills.**
- **Good team leader.**

Suggestions for Improvement: Need Local language learning.

Dr. Amarnath Verma

Chief District Health Officer, Arvalli

Preface

I started off my internship with a vision in my mind so as to be able to learn about the practical aspects of healthcare delivery system on Nutrition in a more detailed manner. Hereby, I take this opportunity to express my deep sense of gratitude to all those who have been instrumental in successful completion of my internship.

Any accomplishment requires blessings and efforts of numerous individuals and this work is no exception. I thank god Almighty for giving me this great opportunity to study and learn at this prestigious organization and help me to implement my theoretical knowledge into practical aspect.

This report is my master thesis for the conclusion of my Post Graduate Diploma Program in Hospital and Health Management at International Institute of Health Management Research, New Delhi. Moreover, it is also a conclusion of my internship at the NHM, District Health society Arvalli, Gujarat. I really appreciated many people who helped me at the project.

The report comprises of my original work in Prevalence of diabetes and diabetes inducedComplications in Arvalli District of Gujarat.

At last, I take immense pleasure to thank **Dr. A. K.Khokkhar** (*Director- International Institute of Health Management Research*) and **Dr. Ashok Kumar Aggarwal** (*Dean, - International Institute of Health Management Research, New Delhi*) for placing me in such an esteemed organization (ICDS) to undertake my dissertation program. I would thank **National Health Mission (NHM), Gujarat** to provide me with an opportunity to work with them, where I gained basic knowledge about working of health system and its functionaries.

Ms. ,Mohini Ranjan

May 2016

Acknowledgement

Every successful story is a result of an effective team work, a team which comprises of a good coach and good team players. Likewise this thesis report is no exception. This has been a meticulous effort of a group of people along with me. I want to take this opportunity to thank each and every one who has been a part of this report.

To start with, I wish to thank my mentor and guide Dr. Preetha Unni. She has been a constant source of encouragement with her valuable inputs about the dissertation. Her timely advice helped me realize what was required to conduct the research and collect the data and helped me complete it in an effective way.

Secondly, I wish to thank Mr. Pandaya sir ,RCHO Sir- NHM-Gujarat Government. She was instrumental in providing me this opportunity and helping me in getting the relevant information.

Also, I wish to take this opportunity to thank all the M&E, block coordinators working at the ground level along with Ravi -District Programme Assistant, NHM-Arvalli for helping me in compiling all the collected data in this report.

Internship Training

At

NHM Gujarat Arvalli
Health & Family Welfare Department

Prevalence of diabetes and diabetes induced Complications in Aravalli District Gujarat .

By

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Under the Guidance of

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Contents

ABBREVIATIONS

CHD	**Coronary Heart Diseases**
ACE	**Angiotensinogen Converting Enzyme**
IDDM	**Insulin Dependent Diabetes Mellitus**
NIDDM	**Non Insulin Dependent Diabetes Mellitus**
WHO	**World Health Organisation**
CAD	**Coronary Artery Disease**
IRS	**Insulin Resistance Syndrome**
T1D	**Type 1 Diabetes**
T2D	**Type 2 Diabetes**
HbA1C	**Haemoglobin A1C**
GDM	**Gestational Diabetes Mellitus**
IFG	**Impaired Fasting Hyperglycemia**
IGT	**Impaired Glucose Intolerance**
ICMR	**Indian Council Medical Research**
CVD	**Cardiovascular Disease**
CHF	**Congestive Heart Failure**

ABSTRACT

Background: India has a high prevalence of diabetes mellitus and the numbers are increasing at an alarming rate. In India alone, diabetes is expected to increase from 40.6 million in 2006 to 79.4 million by 2030. In India, a wide range of outcomes for different groups is buried within the average diabetes prevalence of 8%. Prevalence is only 0.7% for non-obese, physically active, rural Indians while 11% for obese, sedentary, urban Indians; and it peaks at 20% in the Ernakulum district of Kerala, one of India's most urbanized states. The risk factors peculiar for developing diabetes among Indians include high familial aggregation, central obesity, insulin resistance and life style changes due to urbanization.

Objective:

To assess the role of demographic profile, changes in life style habits, dietary patterns occupational and social background in pathogenesis of type of diabetes at Arvalli.

- **To prevention of diabetes through identification of high risk and intervention in the form of health education.**
- **To early Diagnosis of disease and appropriate treatment with reference to high risk group(50 to 60) .**

Results: Uncontrolled/poorly controlled diabetes with longer duration may cause various microvascular and macrovascular complications. Among diabetic patients with complications, type-2 diabetes mellitus (89.98%) was found more prevalent than type- 1 diabetes mellitus (10.02%) in Gujarat state. In type-1 diabetic patients, complications were found more prevalent in age more than 60 (5.50% of total diabetic patients and 54.86% of total type-1 diabetic patients) while in type-2 diabetic patients, complications were found more prevalent in age from 41 to 60 (49.33% of total diabetic patients and 54.82% of total type-2 diabetic patients). In our study the prevalence of type-2 diabetes was shifted in young age of study populations. In our study among the various complications prevalence of hypertension (70.5%) as a single complication was found more common than CHD (3.6%), heart failure (4.4%), renal dysfunction (3.3%), neuropathy (5.9%), stroke (2.3%), retinopathy (3.4%), and nontraumatic lower limb amputations (6.6%). This showed that the higher prevalence of hypertension among diabetic patients in different territories of Gujarat state. According to our study genesis of hypertension was quite earlier as compare to other diabetic complications among diabetic patients in various region of Gujarat. It was found that longer duration of disease causes more numbers of complications with hospitalization. It was found that diabetes patients with hypertension (47.4%), CHD (43.0%), heart failure (34.3%), renal dysfunction (25.5%), neuropathy (26.9%), stroke (16.8%), retinopathy (18.9%), and nontraumatic lower limb amputations (36.2%) associated with two or more than two complications as compared to diabetes patients with hypertension (22.1%), CHD (1.1%), heart failure (1.4%), renal dysfunction 1.0%), neuropathy (1.8%), stroke (0.7%), retinopathy (1.1%), and nontraumatic lower limb amputations (2.1%) as a single complications in total study populations. For blood glucose control anti-diabetic drugs like combination of Sulphonylurea with Biguanides were found to be prescribed more in Gujarat than single drugs. Insulin and various insulin preparations are used for treatment of type I diabetic patients. For the treatment of high blood pressure in diabetic patients ACE inhibitors were found more commonly prescribed than AT_1 receptor antagonist, calcium

channel blocker, beta blocker and diuretics. More interestingly in present study the diabetic patients were found to follow regular meditation/yoga with allopathic treatment. The highest Annual Medicine Cost was seen in patients who had diabetes with coronary artery diseases, heart failure, stroke and nephropathy respectively. This was due to the fact that requirement of antibiotics, hypo lipedemic, anti platelet and other drugs along with drugs for standard diabetic care. The Annual Consultation Charges was highest with patients of coronary artery disease, heart failure and stroke, since these patients needed consultation not only from physicians but also from cardiologists and surgeons. Annual Medicine Charges and Annual Consultation Charges were higher in patients with longer duration of diabetes.

Conclusion: To sum up, the present study provides an updated quantification of the growing public health burden of diabetes in Arvalli region. Faulty dietary and lifestyle habits may be held responsible for increasing diabetes prevalence. As diabetes is primarily a lifestyle disorder, thus, only by improving the daily routine and adopting suitable dietary habits, one can maintain the metabolism to normal and curb the pathology of diabetes to a good extent. Extremely important areas of research could be identifying the risk factors involved in diabetes in people of different geographical regions. Type 2 diabetes is an endemic health problem; therefore, socioeconomic, behavioral and nutritional issues relating to it should be highlighted and addressed. It is suggested that life-style approach in accordance with the geographical habitat, diet, physical activity and the rest should be defined as adaptation

Keywords: Prevalence, Epidemiology, Risk factor, Diabetes, Retrospective study, Treatment

ABOUT NATIONAL HEALTH MISSION GUJARAT

National Health Mission, state health society Gujarat has created wide network of health and medical care facilities in the state to provide primary, secondary and tertiary health care at the door step of every citizen of Gujarat with prime focus on BPL families, marginalized population and weaker sections in rural and urban slum areas.

Department also takes appropriate actions to create adequate educational facilities for medical and paramedical manpower in the state of Gujarat.

NHM in India was launched on 12th April, 2005. It was conceived mainly to provide effective health care to the rural population, especially the disadvantaged groups including women and children, by improving access, enabling community ownership and demand for services, strengthening public health systems for efficient service delivery, enhancing equity and accountability and promoting decentralization. It seeks to provide accessible, affordable and quality health care to the rural population, especially the vulnerable sections. It covers the entire country, with special focus on 18 states where the challenge of strengthening poor public health systems and thereby improve key health indicators is the greatest. These are Uttar Pradesh, Uttaranchal, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, Orissa, Rajasthan, Himachal Pradesh, Jammu and Kashmir, Assam, Arunachal Pradesh, Manipur, Meghalaya, Nagaland, Mizoram, Sikkim and Tripura.

NHM is the combination of national programmes, namely, the Reproductive and Child Health II project, (RCH-II) the National Disease Control Programmes and the Integrated Disease Surveillance Project. NRHM also enable the mainstreaming of Ayurvedic, Yoga, Unani, Siddha and Homeopathy Systems of Health (AYUSH).

Health Pyramid of Gujarat

India embarked on its journey to health after independence with a nation-wide network of efficient and effective health services based on what would later be called as the primary health care approach. Services were organized in a bottom up fashion, with a strong rural focus to attend to the needs of the underserved majority.

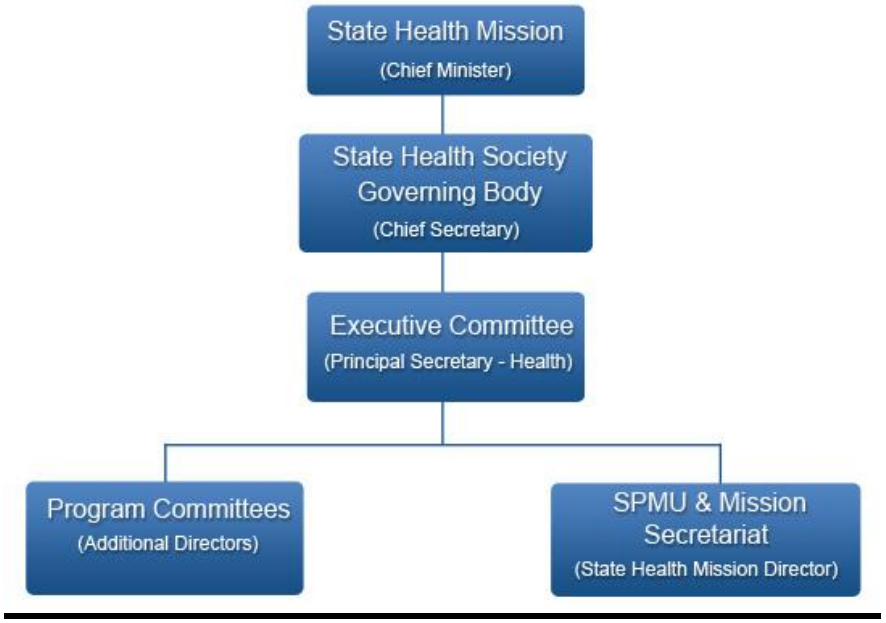
The primary tier has three types of health care institutions namely, a Sub-Centre (SC) for a population of 3000 to 5000, a Primary Health Centre (PHC) for 20,000 to 30,000 population and a Community Health Centre (CHC) for every 1,00,000 population.

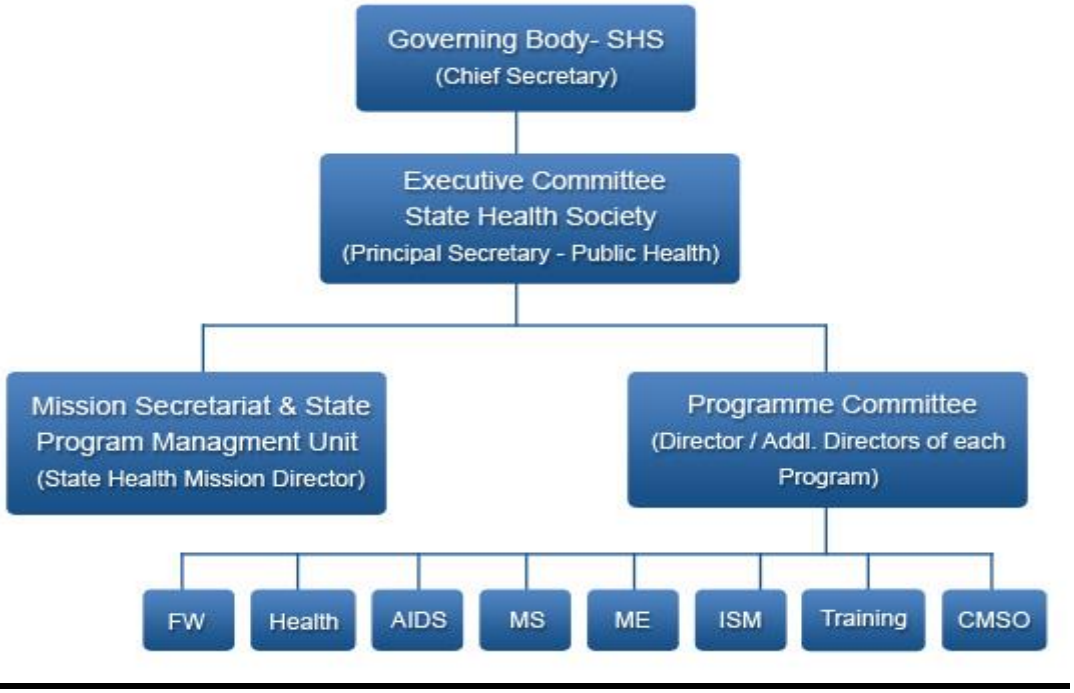
The district hospitals function as the secondary tier of care for the rural population. Tertiary health care is provided by highly specialized hospitals and health care institutions that are well equipped with sophisticated diagnostic and investigative facilities.

The health set-up in Gujarat is thus designed in a three-tier fashion:

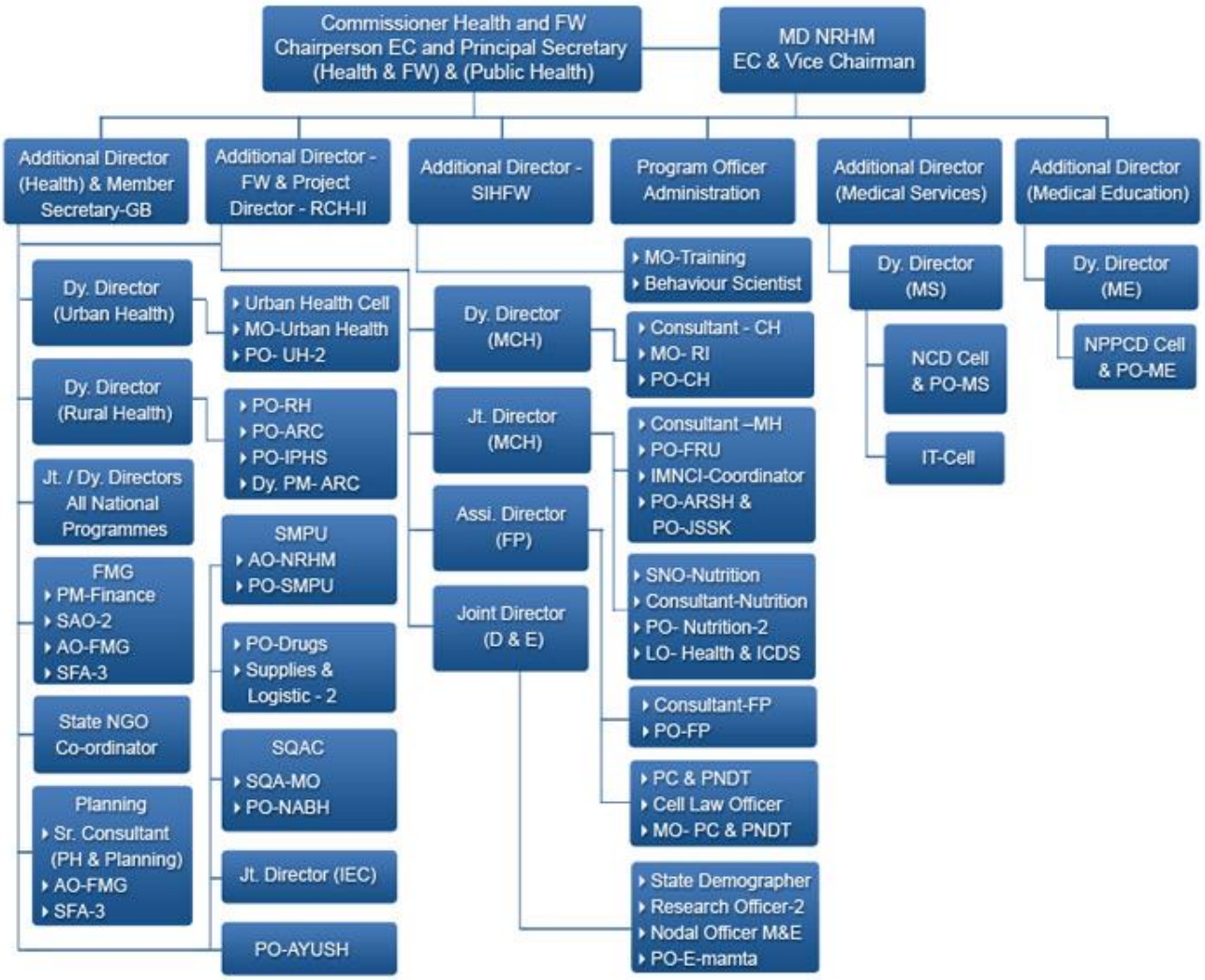
Structure

State Health Mission


State Health Mission
(Chief Minister)
State Health Society
Governing Body
(Chief Secretary)
Executive Committee
(Principal Secretary - Health)
Program Committees
(Additional Directors)
SPMU & Mission
Secretariat
(State Health Mission Director)


Governing Body- SHS
(Chief Secretary)
Executive Committee
State Health Society
(Principal Secretary - Public Health)
Mission Secretariat & State
Program Managment Unit
(State Health Mission Director)
Programme Committee
(Director / Addl. Directors of each
Program)
FW
Health
AIDS
MS
ME
ISM
Training
CMSO

Organogram



Demographic, Socio-economic and Health profile of Gujarat State as compared to India figures

Indicator	Gujarat	India
Total population (In crore) (Census 2011)	6.03	121.01
Decadal Growth (%) (Census 2011)	19.17	17.64
Infant Mortality Rate (SRS 2013)	36	40
Maternal Mortality Rate (SRS 2010-12)	122	178
Total Fertility Rate (SRS 2012)	2.3	2.4
Crude Birth Rate (SRS 2013)	20.8	21.4
Crude Death Rate (SRS 2013)	6.5	7
Natural Growth Rate (SRS 2013)	14.3	14.4
Sex Ratio (Census 2011)	918	940
Child Sex Ratio (Census 2011)	886	914
Schedule Caste population (in crore) (Census 2001)	0.35	16.6
Schedule Tribe population (in crore) (Census 2001)	0.74	8.4
Total Literacy Rate (%) (Census 2011)	79.31	74.04
Male Literacy Rate (%) (Census 2011)	87.23	82.14
Female Literacy Rate (%) (Census 2011)	70.73	65.46

BACKGROUND : India has a high prevalence of diabetes mellitus and the numbers are increasing at an alarming rate. In India alone, diabetes is expected to increase from 40.6 million in 2006 to 79.4 million by 2030. In India, a wide range of outcomes for different groups is buried within the average diabetes prevalence of 8%. Prevalence is only 0.7% for non-obese, physically active, rural Indians while 11% for obese, sedentary, urban Indians; and it peaks at 20% in the Ernakulum district of Kerala, one of India's most urbanized states. The risk factors peculiar for developing diabetes among Indians include high familial aggregation, central obesity, insulin resistance and life style changes due to urbanization.

INTRODUCTION

Diabetes is a group of diseases marked by high levels of blood glucose, also called blood sugar, resulting from defects in insulin production, insulin action, or both.
Diabetes can lead to serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications.
Type 1 diabetes is called insulin-dependent diabetes mellitus (IDDM) or juvenileonset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin that regulates blood glucose.
Type 2 diabetes is called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ ethnicity.Epidemiology is defined as "the study of the distribution and determinants of health related status or events in specified populations". Epidemiological studies highlight the health issues currently affecting the nation and also help us to delineate the risk factors associated with the disease. Furthermore these studies also guide us to estimate the disease burden of the future, which is essential to plan preventive health strategies. The prevalence of type 2 diabetes mellitus is rising in alarming scale in India, which poses a major threat to clinical management, economic growth and social wellbeing of patients. India leads the world with largest number of diabetic subjects earning the dubious distinction of being termed the "diabetes capital of the world".

India, the world's second most populous country, now has more people with type 2 diabetes (more than 50 million) than any other nation. The estimated global prevalence of diabetes is around 6.4% and more than 280 million people in the world have diabetes. Of those affected, the majority live in the developing world.
According to the World Health Organisation (WHO) estimates, India had 32 million diabetic subjects in the year 2000 and this number would increase to 80 million by the year 2030.[7] Currently, India is passing through an epidemiological transition due to rapid urbanization coupled with economic growth. The changing pattern in the economy is obvious from the current urbanization rate which stands at 35% compared to 15% in the 1950's. These rapid transitions will have a major implication on the present and future disease patterns in India with particular reference to noncommunicable diseases like diabetes.

Gujarat having the second highest number of diabetics in the country after Tamil Nadu. Guajarati's were genetically prone to the disease. They held less physical work and bad eating habits responsible for the high prevalence of diabetes in the state. Though no exact figures were available for diabetics in the state, but their number might be around 10 per cent of the total population, that is close to 11 lakh. In **Aravalli** alone, the number could be around one to two lakh. Epidemiology study is required for stressing on the need for creating awareness among the masses to check this disease, which creates kidney, liver and heart malfunctions. People can take preventive measures like diet control can be resorted after diagnosis of the disease, one must immediately consult a specialist in case of detection of the disease. Delay in treatment might cause several other complications Diabetes is a worldwide spreaded disease with high morbidity and mortality rate. It is considered as 2nd most common cause that is associated with higher mortality. Diabetes can cause many complications. Acute complications like hyperglycemia, ketoacidosis or non ketotic hyperosmolar coma may occur if the disease is not adequately controlled. Serious long-term complications include diabetic neuropathies, cardiovascular disorder like hypertension, coronary artery disease and heart failure (doubled risk), chronic renal failure (diabetic nephropathy is the main cause of diabetes in developed world adults), retinal damage (which can lead to blindness and is the most significant cause of adult blindness in the non-elderly in the developed world), stroke, nerve damage (of several kinds), and microvascular damage, which may cause erectile dysfunction (impotence) and poor healing. Poor healing of wounds.

PROBLEM STATEMENT : Diabetes was estimated to be responsible for 109 thousand deaths, 1157 thousand years of life lost and for 2263 thousand disability adjusted life years (DALYs) in India during 2004. However, health systems have not matured to manage diabetes effectively. The limited studies available on diabetes care in India indicate that 50 to 60% of diabetic patients do not achieve the glycemic target of HbA1c below 7%. Awareness about and understanding of the disease is less than satisfactory among patients, leading to delayed recognition of complications. The cost of treatment, need for lifelong medication, coupled with limited availability of anti-diabetic medications in the public sector and cost in the private sector are important issues for treatment compliance. This article attempts to highlight the current constraints in the health system to effectively manage diabetes and the need for developing workable strategies for ensuring timely and appropriate management with extensive linkage and support for enhancing the availability of trained manpower, investigational facilities and drugs.

REVIEW OF LITERATURE

1. Diabetes mellitus: The term **"diabetes mellitus"** describes a metabolic disorder of multiple etiologies characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both. The effects of diabetes mellitus include long–term damage, dysfunction and failure of various organs (WHO 1999). **Diabetes mellitus**, often simply referred to as **diabetes** is a group of metabolic diseases in which a person has high blood sugar, either because the body does not produce enough insulin, or cells do not respond to the insulin that is produced. This high blood sugar produces the classical symptoms of polyuria (frequent urination), polydipsia (increased thirst) and polyphagia (increased hunger). Clinical features similar to diabetes mellitus were described 3000 years ago

by the ancient Egyptians. The term "diabetes" was first coined by Araetus of Cappodocia (81-133AD). Credit for the intial observation that diabetes is not single disorder also mentioned by two Indian physician- Charak and Sisruta (600 B.C.). Later, the word mellitus (honey sweet) was added by Thomas Willis (Britain) in 1675 after rediscovering the sweetness of urine and blood of patients (first noticed by the ancient Indians). It was only in 1776 that Dobson (Britain) firstly confirmed the presence of excess sugar in urine and blood as a cause of their sweetness. In modern time, the history of diabetes coincided with the emergence of experimental medicine. The role of the pancreas in pathogenesis of diabetes was discovered by Mering and Minkowski (Austria) 1889. Later, this discovery constituted the basis of insulin isolation and clinical use by Banting and Best (Canada) in 1921. There were trials to prepare an orally administrated hypoglycemic agent ended successfully by first marketing of tolbutamide and carbutamide in 1955. This report will also discuss the history of dietary management and acute and chronic complications of diabetes.

1.1 Classification of Diabetes Mellitus:

Most cases of diabetes mellitus fall into three broad categories: type 1, type 2, and Gestational diabetes. A few other types are also described. The term diabetes, without Qualification , usually refers to diabetes mellitus. The rare disease diabetes insipid us Has similar symptoms as diabetes mellitus, but without disturbances in the sugar metabolism (insipid us meaning "without taste" in Latin).

1.1.A Type 1 diabetes: Type 1 diabetes mellitus is characterized by loss of the insulin-producing beta cells of
the islets of Langerhans in the pancreas leading to insulin deficiency. This type of diabetes can be further classified as immune-mediated or idiopathic. The majority of type 1 diabetes is of the immune-mediated nature, where beta cell loss is a T-cell mediated autoimmune attack. Type 1 diabetes (T1D) usually develops in childhood and adolescence and patients require lifelong insulin injections for survival. There is no known preventive measure against type 1 diabetes, which causes approximately 10% of diabetes mellitus cases in North America and Europe.

Description:

- It is formerly known as Insulin-Dependent Diabetes Mellitus (IDDM).
- It is characterized by hyperglycemias due to an absolute deficiency of the insulin hormone produced by the pancreas.
- Patients require lifelong insulin injections for survival, Usually develops in children adolescents (although can occur later in life).
- It may present with severe symptoms such as coma or ketoacidosis.
- Patients are usually not obese with this type of diabetes, but obesity is not in compatible with the diagnosis.
- Patients are at increased risk of developing micro vascular and macro vascular complications.

Symptoms:

- It is increased urinary frequency (polyuria), thirst (polydipsia), hunger (polyphagia), and unexplained weight loss.
- Numbness in extremities, pain in feet (disesthesias), fatigue, and blurred
- vision.

- Recurrent or severe infections

.

- Loss of consciousness or severe nausea/vomiting (ketoacidosis) or coma.

- Ketoacidosis more common in T1D than in T2D.

Diagnosis:

- Diagnosis is made by the presence of classic symptoms of hyperglycemias and an abnormal blood test.
- In a patient without classic symptoms, diagnosis can also be made by two abnormal blood tests on separate days.

- In most settings (although not always available in resource-poor countries), another test called HbA1C is done to approximate metabolic control over previous 2-3 months and to guide treatment decisions.

Treatment:

- Early detection and treatment of complications (at intervals recommended by national and international guidelines): eye exam, urine test, foot care, and specialist referral as needed.
- Patient education about self-monitoring for sign/symptoms of hypoglycaemias (such as hunger, palpitations, shakiness, sweating, drowsiness and dizziness)And hyperglycemias Patient education about diet, exercise, and foot care ,Where possible, patient-led support groups and community involvement.

1.1.B Type 2 diabetes:

Type 2 diabetes mellitus is characterized by insulin resistance which may be combined with relatively reduced insulin secretion. The defective responsiveness of body tissues to insulin is believed to involve the insulin receptor. However, the specific defects are not known. Diabetes mellitus due to a known defect are classified separately. Type 2 diabetes is the most common type. Type 2 diabetes (T2D) usually develops in adulthood and is related to obesity, lack of physical activity, and unhealthy diets. This is the more common type of diabetes (representing 90% of diabetic cases worldwide) and treatment may involve lifestyle changes and weight loss alone, or oral medications or even insulin injections. In the early stage of type 2 diabetes, the predominant abnormality is reduced insulin sensitivity. At this stage hyperglycemias can be reversed by a variety of measures and medications that improve insulin sensitivity or reduce glucose production by the liver.

Description:

- Formerly named non-insulin-dependent diabetes mellitus (NIDDM).Characterized by hyperglycemias due to a defect in insulin secretion usually with a contribution from insulin resistance.
- Patients usually do not require lifelong insulin but can control blood glucose with diet and exercise alone, or in combination with oral medications, or with the addition of insulin.
- Usually (but not always) develops in adulthood (and is on the rise in children and adolescents).It is related to obesity, decreased physical activity and unhealthy diets.

- As in T1D, patients are at a higher risk of micro vascular and macro vascular complications.

Symptoms:

- Patients may have no symptoms at all or minimal symptoms for years before being diagnosed. Patients may have increased urinary frequency , thirst, hunger , and unexplained weight loss.
- Patients may also experience numbness in extremities, pain in feet (disesthesias), and blurred vision.
- Patients may have recurrent or severe infections. Patients may present with loss of consciousness or coma but this is less common than in T1D.

Diagnosis:

- Diagnosis is made by the presence of classic symptoms of hyperglycemias and an abnormal blood test.
- In a patient without classic symptoms, diagnosis can also be made by two abnormal blood tests on separate days.
- In most settings (although it may not be available in some resource-poor settings), another test called HbA1C is done to approximate metabolic control over previous 2-3 months and to guide treatment decisions.
- Some asymptomatic patients are diagnosed through "opportunistic screening" of high risk groups (at a routine medical visit, the health care provider may identify the patient as being at higher risk of diabetes and recommend a screening test).
- For example, age >45 years of age, a BMI >25 kg/m2 may, being of certain ethnic group or being hypertensive may prompt a screening test.
- In some cases, the patient him/herself requests screening.

Treatment:

- Overall aim of treatment is symptom relief and prevention or delay of complications by targeting normal blood glucose levee.
- Patients treated with diet/exercise or with addition of one or more categories of oral medications, with a combination of oral medications and insulin, or with insulin alone.
- Glucometer to self-monitor blood glucose (with less frequency than with T1D).
- Early detection and treatment of complications (at intervals recommended by national and international guidelines): eye exam, urine test, foot care, and specialist referral as needed.
- Self-monitoring for signs/symptoms of hypoglycaemias (such as hunger, palpitations, shakiness, sweating, drowsiness and dizziness) and hyperglycemias.Patient education about diet, exercise, and foot care.

Table 1: Comparison between type 1 and type 2 diabetes mellitus:

Comparison of type 1 and 2 diabetes		
Feature	Type 1 diabetes	Type 1 diabetes
Onset	Sudden	Gradual
Age of onset	Any age(mostly	Mostly in adults

	young)	
Body habits	Thin or normal	Thin or normal
Ketoacidosis	Common	Rare
Autoantibodies	Usually Present	Absent
Endogenous insulin	Low or Absent	Normal increased or decreased
Concordance in identical twins	50%	90%
Prevalence	Low prevalent	More prevalent- 90 to 95%

1.1.C . Gestational diabetes: Gestational diabetes mellitus (GDM) resembles type 2 diabetes in several respects, involving a combination of relatively inadequate insulin secretion and responsiveness. It occurs in about 2%–5% of all pregnancies and may improve or disappear after delivery. Gestational diabetes is fully treatable but requires careful medical supervision throughout the pregnancy. About 20%–50% of affected women develop type 2 diabetes later in life. Even though it may be transient, untreated gestational diabetes can damage the health of the foetus or mother. Risks to the baby include macrosomia (high birth weight), congenital cardiac and central nervous system anomalies, and skeletal muscle malformations. Increased fatal insulin may inhibit fatal surfactant production and cause respiratory distress syndrome. Hyper bilirubinemia may result from red blood cell destruction. In severe cases, prenatal death may occur, most commonly as a result of poor placental perfusion due to vascular impairment. Labour induction may be indicated with decreased placental function. A caesarean section may be performed if there is marked fatal distress or an increased risk of injury associated with macrosomia, such as shoulder dystopia.

Description:

- It is characterized by hyperglycemias of varying severity diagnosed during Pregnancy (without previously known diabetes) and usually (but not always) resolving within 6 weeks of delivery.
- Risks to the pregnancy itself include congenital malformations, increased birth weight and an elevated risk of perinatal mortality.
- It increased risk to woman of developing diabetes (T2D) later in life.

Symptoms:

- It increased thirst (polydipsia) and increased urination (polyuria) are more commonly noted (although other symptoms can be present).
- Because pregnancy itself causes increased urination, these symptoms are difficult to recognize as abnormal.
- A larger than normal baby during pregnancy (noted on routine prenatal exam) may prompt diabetic screening.

Diagnosis:

- Standard OGTT is done at 24-28 weeks after an overnight fast (fasting plasma glucose and a plasma glucose 2 hours after 75g glucose drink is done).

- If fasting and postprandial blood sugars are elevated in the first trimester, this may indicate preexisting diabetes mellitus (which is considered a different condition, with different implications).

Treatment:

- Strict metabolic control of blood glucose to lower obstetrical risks.Patients treated with diet/exercise, with addition of oral medications, or with the addition of insulin.
- Glucometers to self-monitor blood glucose. Patient education about diet and exercise.
- Patient education after delivery regarding weight loss/exercise to prevent future diabetes.
- Lifelong screening for T2D as patient will be in high risk category.

Signs and symptoms of diabetes mellitus

Epidemiology of diabetes mellitus in world: Prevalence of diabetes worldwide in 2000 was 2.8%. In 2000, according to the World Health Organization, at least 171 million people worldwide suffer from diabetes, or 2.8% of the population. Its incidence is increasing rapidly, and it is estimated that by 2030, this number will almost double. Diabetes mellitus occurs throughout the world, but is more common (especially type 2) in the more developed countries. The greatest increase in prevalence is, however, expected to occur in Asia and Africa, where most patients will probably be found by 2030. The increase in incidence of diabetes in developing countries follows the trend of urbanization and lifestyle changes, perhaps most importantly a "Western-style" diet. This has suggested an environmental (i.e., dietary) effect, but there is little understanding of the mechanism(s) at present, though there is much speculation, some of it most compellingly presented. For at least 20 years, diabetes rates in North America have been increasing substantially. In 2010 nearly 26 million people

have diabetes in the United States alone, from those 7 million people remain undiagnosed. Another 57 million people are estimated to have pre-diabetes.[19] The Canters for Disease Control has termed the change an epidemic.

Epidemiology of diabetes mellitus in India:

The first national study on the prevalence of type 2 diabetes in India was done between 1972 and 1975 by the Indian Council Medical Research (ICMR, New Delhi). Screening was done in about 35,000 individuals above 14 yr of age, using 50g glucose load. Capillary blood glucose level >170 mg/dl was used to diagnose diabetes. The prevalence was 2.1 per cent in urban population and 1.5 per cent in the rural population while in those above 40 yr of age, the prevalence was 5 per cent in urban and 2.8 per cent in rural areas.[24] Subsequent studies showed a rising trend in the prevalence of diabetes across different parts of India. In 1988, a study done in a small township in south India reported a prevalence of 5 per cent. The prevalence of impaired glucose tolerance in the same study was 2 per cent. A national rural diabetes survey was done between 1989 and 1991 in different parts of the country in selected rural populations.[25] This study which used the 1985 WHO criteria to diagnose diabetes, reported a crude prevalence of 2.8 per cent. The Eluru survey which looked at the prevalence of known diabetes in four villages in Andhra Pradesh showed a individuals aged above 40 yr which was unexpectedly high at that time for a rural area with low socio-economic status and decreased health awareness.

A study done in 1988 in Chennai reported a prevalence of 8.2 per cent in the urban and 2.4 per cent in the rural areas.[28] A subsequent study in the same urban area done after five years showed an age standardized prevalence of 11.6 per cent indicating a rising trend in prevalence of diabetes. A very high prevalence of 16.3 per cent was reported in Thiruvanathapuram in Kerala State in the year 1999.[27] In the same year, a prevalence of 8.2 per cent was reported from Guwahati. A cross-sectional population survey was done in the Kashmir valley in 2000 and the prevalence of known diabetes among adults aged >40 yr was found to be 1.9 per cent. The National Urban Diabetes Survey (NUDS), a population based study was conducted in six metropolitan cities across. India and recruited reported that the age standardized prevalence of type 2 diabetes was 12.1 per cent. This study also revealed that the prevalence in the southern part of India to be higher-13.5 per cent in Chennai, 12.4 per cent, in Bangalore, and 16.6 per cent Hyderabad; compared to eastern India (Kolkatta), 11.7 per cent ,northern India (New Delhi), 11.6 per cent; and western India (Mumbai), 9.3 per cent. The study also suggested that there was a large pool of subjects with impaired glucose tolerance (IGT), 14 per cent with a high risk of conversion to diabetes.

Background of District Arvalli :

Arvalli district is one of the 26 districts of Gujarat state in north India. The district is divided into 6 blocks and 32 PHCs, one Sub District Hospital (SDH) , 8 CHC, 215 Sub Centre, Modasa city is the administrative headquarters of this district. Total population is 1088827 .

Objective:

To assess the role of demographic profile, changes in life style habits, dietary patterns occupational and social background in pathogenesis of type of diabetes at Arvalli.

- **To prevention of diabetes through identification of high risk and intervention in the form of health education.**
- **To early Diagnosis of disease and appropriate treatment with reference to high risk group(50 to 60) .**

METHODOLOGY:

STUDY TYPE: Retrospective secondary data analysis

STUDY AREA: This study will be conducted in Arvalli district and NCD camp Modasa, district of Gujarat.

STUDY POPULATION: All the Diabetes cases which are tested to the NCD camp,of modasa related.

STUDY DURATION: February 2016 to April 2016

SAMPLE SIZE: All the Diabetes case tested in CHC or, NCD camp modasa from1st April 2014to 31st March 2015.

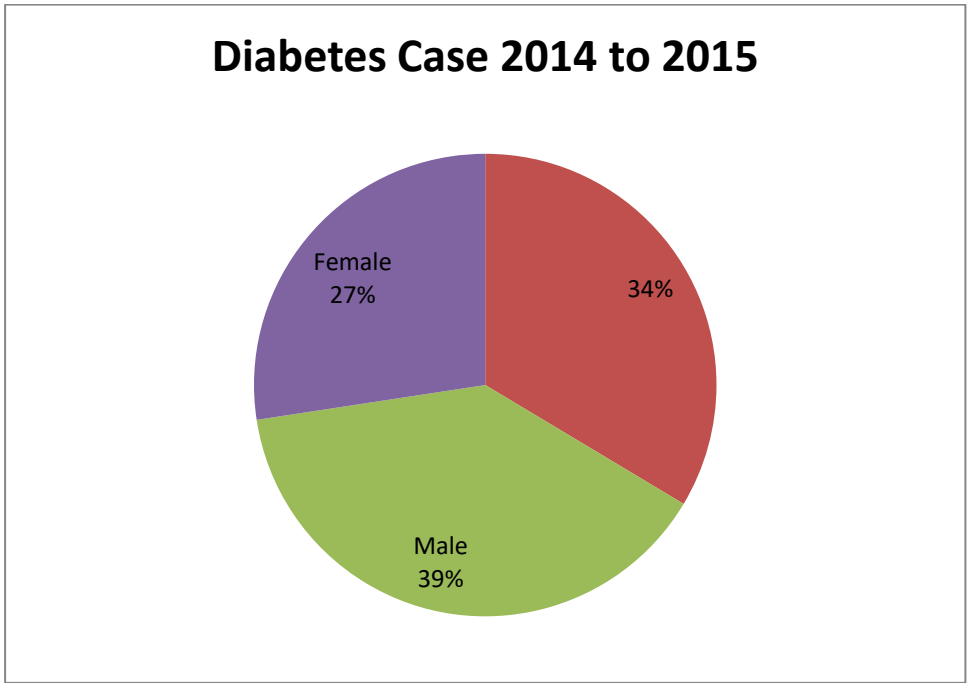
TOOLS AND TECHNIQUES: Data was gathered from diabetes patient case from district level .Data was analyzed with the help of Microsoft excel.

ETHICAL CONSIDERATION: Permission from authorities has been taken which includes IDSP departments and CDHO (Chief District Health Officer).

Finding & Analysis:

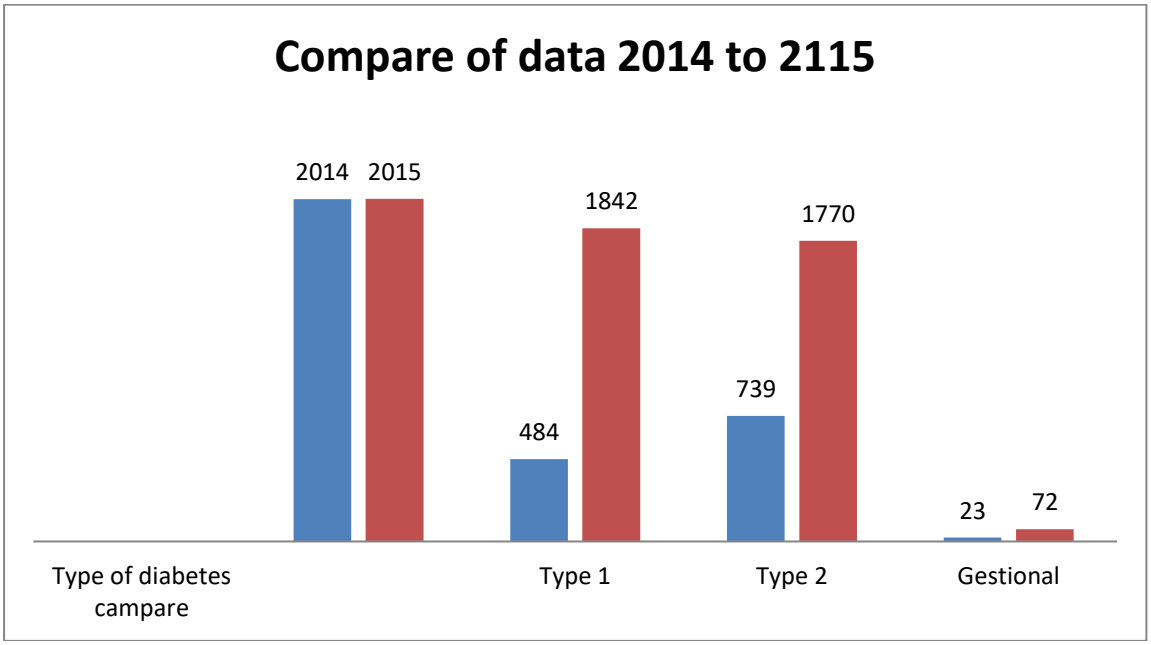
Prevalence of diabetes mellitus according to Male and Female of diabetes in 6 BLOCK Arvalli District , Gujarat

Compare male and female Diabetes case 2014 to 2015		
	2014	2015
Male	729	2340
Female	660	1644



Prevalence of diabetes mellitus according to types of diabetes in Arvalli District, Gujarat State :

Type of Diabetes	2014 (Patients)	2015(patients)
Type 1	484	1872
Type 2	739	1770
Gestational	23	72



Prevalence of diabetes mellitus according to age group in Arvalli District, Gujarat State:

Age group	2014 (% Diabetes case)	2015(% Diabetes case)
Below 30	5.20	6.90
31 to 40	10	14.20
41 to 50	26	30
51 to 60	34	45
60 above	24	30

Prevalence of Diabetes with complications among diabetic patients in Arvalli District:

Associated Complication	Percentage of patients	No of patients
Suspected Hypertention	30	27774
CVD	0	0
Oral Cancer	0.35	43
Coronary heart disease	2.4	10
Heart failure	2.2	9

RESULT:

Prevalence of diabetes in Arvalli District : Among diabetic patients with complications, type 2 diabetes mellitus was found more prevalent than type 1 diabetes mellitus in Arvalli District. All District populations are at particularly high risk for type 2 diabetes (40.98%) and its complications as compared to type 1 diabetes (10.02%) . Type 2 diabetes in children

and adolescents although still rare, is being diagnosed more frequently among urban populations.But according to our study age group wise 51 to 60 High risk group diabetes was found.

Conclusion:

To sum up, the present study provides an updated quantification of the growing public health burden of diabetes in Arvalli region. Faulty dietary and lifestyle habits may be held responsible for increasing diabetes prevalence. As diabetes is primarily a lifestyle disorder, thus, only by improving the daily routine and adopting suitable dietary habits, one can maintain the metabolism to normal and curb the pathology of diabetes to a good extent. Extremely important areas of research could be identifying the risk factors involved in diabetes in people of different geographical regions. Type 2 diabetes is an endemic health problem; therefore, socioeconomic, behavioral and nutritional issues relating to it should be highlighted and addressed. It is suggested that life-style approach in accordance with the geographical habitat, diet, physical activity and the rest should be defined as adaptation.

Recommendations:

- Emphasis on improving the literacy rate of the population.
- To increase the availability of endocrinologists.
- Diabetes education must be imparted by every clinician as per standard norms.
- Generalist or primary care physician should be enriched with more knowledge by CME and other programmes.
- Media and Non Government Organisation should be involved in the daunting task of removing misbelieves, ignorance and instituting diabetes preventive measures in the community

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