STATUS OF DIABETES CERTIFICATE COURSES FOR MEDICAL PROFESSIONALS IN INDIA

A dissertation submitted in partial fulfillment of the requirements
For the award of

Post-Graduate Diploma in Health and Hospital Management

By

Dr. SURJEET KOUR BAKSHI



International Institute of Health Management Research

New Delhi -110075

May, 2010

STATUS OF DIABETES CERTIFICATE COURSES FOR MEDICAL PROFESSIONALS IN INDIA

A dissertation submitted in partial fulfillment of the requirements
For the award of

Post-Graduate Diploma in Health and Hospital Management

By

Dr. SURJEET KOUR BAKSHI

under the guidance of

Dr .Sandeep Bhalla
Program Manager
Program Secretariat –EBDM
Public Health Foundation of India
Indian Institute of Public Health -Delhi

Ms. Minakshi Gautam
Assistant Professor
IIHMR -Dwarka
New Delhi



International Institute of Health Management Research

New Delhi -110075

MAY, 2010

Date: 18th May, 2010

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Dr. Surjeet Kour Bakshi** has successfully completed her three months internship in our organization from February 1, 2010 to April 30, 2010. During this internship she has worked on project for Certificate course in evidence based diabetes management under the guidance of me and my team at Indian Institute of public health.

We wish her good luck for her future assignments.

(Signature)

Dr .Sandeep Bhalla
Program Manager Certificate Course in Evidence Based Diabetes Management
Program Secretariat -EBDM
Public Health Foundation of India
Indian Institute of Public Health -Delhi

Certificate of Approval

The following dissertation titled **"STATUS OF DIABETES CERTIFICATE COURSES FOR MEDICAL PROFESSIONALS IN INDIA."** is hereby approved as a certified study in management carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite for the award of **Post- Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted .

Dissertation Examination Committee for evaluation of dissertation.

Name	Signature
_____	_____
_____	_____
_____	_____

Certificate from Dissertation Advisory Committee

This is to certify that **Dr. Surjeet Kour Bakshi** a participant of the **Post- Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. She is submitting this dissertation titled **"STATUS OF DIABETES CERTIFICATE COURSES FOR MEDICAL PROFESSIONALS IN INDIA"** in partial fulfillment 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 or book.

Dr .Sandeep Bhalla
Program Manager
Program Secretariat –EBDM
Public Health Foundation of India

Ms. Minakshi Gautam
Assistant Professor
IIHMR -Dwarka
New Delhi

ABSTRACT

STATUS OF DIABETES CERTIFICATE COURSES FOR MEDICAL PROFESSIONALS IN INDIA

By

Dr. Surjeet Bakshi

Epidemics of non-communicable diseases are presently emerging or accelerating in most developing countries. Among the major health transitions witnessed in the second half of the twentieth century, the most globally pervasive change has been the rising burden of non communicable diseases especially diabetes . This has given rise to new challenges of providing acute and chronic care for non communicable diseases, especially in poor countries such as India with an already existing mismatch between health care needs and resources. Diabetes reduces both a person's quality of life and life expectancy and also imposes huge socio-economic burden on families and health system.

Constrains of the health system in terms of lack of manpower trained in diabetes care , prevention and management suggests that there is urgent need of taking initiatives to train the medical professionals since the already existing are not aware enough with the most effective interventions and tend to spend more time on acute management then chronic care. The study done shows that there is scarcity of doctors with expertise like MD/DM endocrinologist, who are very few .The limited number of these doctors are mostly confined to the urban regions only. Thus leaving behind the rural population of India underserved. The population in periphery is mostly catered by General physicians who are the first point of contact but not skilled and trained enough .Hence the need of the hour is to train these doctors with short term courses. These short term courses should be on evidence and skilled based knowledge accessible to all categories of doctors with different streams, so that the urgent need for managing diabetes is reasonably met. A strong advocacy for such diabetic education programs run by trained experts is need of the hour in which in a short span of time participants get the knowledge and skills of higher quality.

ACKNOWLEDGEMENT

The writing of this dissertation has been one of the most significant academic challenges I have ever had to face. Without the support, patience and guidance of the following people, this study would not have been completed. It is to them that I owe my deepest gratitude.

PHFI TEAM

- Dr. Sanjay Zoodpey (Director IIPH)
- Dr. Abhay Saraf (Guide/Mentor)
- Dr. Sandeep Bhalla
- Mr. Saurabh Wadhwa
- Dr. Nivedita Akarte
- Miss. Kanika Oberoi
- Some Doctors (endocrinologists) associated with diabetes course (Interviewed)
- Faculty of Institutions running the Diabetes management course in Chennai.

IIHMR FACULTY

- Ms. Minakshi Gautam (Mentor)

I

DEDICATE MY WORK TO MY BELOVED MASTER

MY PARENTS

MY GUIDE

&

ALL THOSE WHO HAVE INSPIRED ME

Table of Contents

Serial No.	Contents	Page Number
	Abstract	v
	Acknowledgment	vi
	Table of Contents	viii
	List of Figures	ix
	List of Annexure	32
1	Part -1 Internship Report	1
1.1	Introduction to Organization	2
1.2	Roles and Responsibilities	7
1.3	Brief Report on Managerial Tasks	8
1.4	Reflective learning during Internship	9
2	Part II Dissertation on "Status of Diabetes certificate Courses for medical professionals in India."	
2.1	Introduction	10
2.2	Research Methodology	18
3	Results	20
4	Conclusions and Recommendations	29
5	References	36

List of Figures

1. Fig 1.1 Representing the prevalence of Diabetes in Year 2000.

2. Fig 1.2 Representing the prevalence of Diabetes in Year 2030.

3. Fig 1.3 Epidemiological studies of Type II diabetes in rural-urban regions of India.

PART I

Internship Report

1.1 Public Health Challenges

The challenge of speedily and steadily improving performance on health indicators confronts our country. Beyond the numbers, India's population needs to be assured of readily accessible, easily affordable and qualitatively adequate health services. Coupled with this is the human resource crisis resulting from a severe shortfall in skilled health personnel, especially in underserved areas. The WHO launched the Health Workforce Decade (2006-2015) and Human Resources for Health have been discussed as a key theme in the World Health Report, 2006, titled: 'Working Together for Health.' The report highlighted the growing challenge of maintaining 'the needed numbers, quality, mix and distribution of personnel to meet the healthcare needs of the population.' Clearly, there are multiple stresses and strains on the goal of medical education to produce health personnel capable of managing common problems in realistic health care settings.

Adding to the complexity of the challenge is India's rapid health transition, where it is confronted both by an unfinished agenda of eliminating infectious diseases, nutritional deficiencies, unsafe childbirth and the challenge of emerging and re-emerging diseases as well as escalating epidemics of non communicable diseases. This composite threat to the nation's health and development needs a concerted public health response that can ensure delivery of cost-effective interventions for health promotion, disease prevention and affordable diagnostic and the therapeutic health care. Health care reform, guided by a paradigm shift from an exclusive focus on clinical medicine to a concerted public health response, encapsulating health promotion, disease prevention and affordable diagnostic and therapeutic health care for all, is an inescapable imperative. Central to this shift is the growth of public health as an academic and practical discipline.

Public Health as a formal discipline should ideally integrate streams of knowledge from diverse disciplines, integrating learning's and perspectives from life sciences, especially human biology; quantitative sciences such as epidemiology, biostatistics and demography; social and behavioral

sciences including economics, health promotion and communications; political science and humanities, especially health inequities, human rights, gender and ethics; and elements of management. Public health aims to focus on and influence the multiple determinants of health at the population level (economic, social, behavioral and biological) and to undertake and evaluate multi-sectoral interventions to positively influence those determinants. It also involves the study of health systems, their structure and management practices as channels for delivery of health services. While the specific applications of such knowledge would vary across different areas of medicine and public health, a broad array of disciplines must inform and influence the totality of their precept and practice to advance global health. This, holistic approach is thus far, nascent in India, causing impediments to access, availability and quality of health care provided by professionals. Presently, graduates from the few public health schools in India are insufficient, in numbers or limited in exposure to multi disciplinary learning.

The resultant shortfall of professionals with inter-disciplinary orientation, relevant knowledge and skill-sets has inhibited opportunities for multi-sectoral public health action and a broader understanding of health issues. Health professionals with such multidisciplinary training could, ideally, supplement and enhance the strength of medical doctors, nurses and health workers while enhancing both the efficiency and equity perspectives of health systems. Knowledge and application of diverse disciplines shall enable the establishment of synergistic links in designing and delivering health care services across the board. Public health education, in India, must be reconfigured to enable the attainment of this vision.

THE GENESIS OF PUBLIC HEALTH FOUNDATION OF INDIA

The Public Health Foundation of India (PHFI) was conceptualized as a response to emerging public health challenges in India. In the inception of this unique public private partnership lies recognition that meeting the shortfall of health professionals is imperative for a sustained and holistic response to India's public health challenges. The foundation of our recognizes that health care in India ought to be addressed not only from the scientific perspective of what works, but also from the social perspective of who needs it the most, and that health systems performance needs to be assessed on the attributes of access, affordability, adequacy, appropriateness, efficiency, cost-effectiveness and equity. PHFI emerged as a concept in the mid-2000s and has gradually shaped into a dedicated mission with extraordinary national intent, aimed at propelling

India, and therefore the region, towards better public health outcomes. The idea of PHFI as an institution was developed under the leadership of Mr. Rajat K. Gupta, Former Managing Director of McKinsey & Company, the Ministry of Health & Family Welfare, Government of India and Prof. K. Srinath Reddy, Former Head of Department, Cardiology at the All India Institute of Medical Sciences, New Delhi and was collaboratively evolved in consultation with multiple constituencies, including State and Central Governments in India, Indian and international academia, multi- & bilateral agencies and civil society groups.

It is a large-scale, autonomously governed, public private initiative, launched by the Honorable Prime Minister of India, Dr. Manmohan Singh on March 28, 2006 to strengthen India's public health workforce capacity to address India's critical public health challenges by effectively planning, implementing and managing the country's massive health care structures and systems. The Foundation is managed by a fully empowered, independent Governing Board that is represented by stalwarts from across multiple constituencies, including senior government officials, eminent Indian and International academic and scientific leaders, civil society representatives and corporate heads. The President is Prof. K. Srinath Reddy, a cardiologist and epidemiologist who brings in a broad range of public health experience at national and global levels. The concept enjoys wide support nationally and internationally. Working closely with the Central and state governments across the country and international partner institutions across five continents, PHFI is working towards education, training, research, policy and advocacy efforts and communication, cutting across major disciplines of public health. Many initiatives at the organization have been strengthened by strong links and support from government agencies in policy and programmes alike. With the Ministry of Health and Family Welfare as the nodal agency; state governments, the Prime Minister's Office, the Planning Commission, Department of Science and Technology and Finance Ministry have extended their support. Government officers have also been seconded to engage and work collaboratively with the PHFI team to develop solutions for the health sector. PHFI partners with the World Bank, WHO, United Nations agencies, national and international NGOs and 65 schools of Public Health from around the world.

PHFI'S VISION

- Establishing a network of new institutes of public health over the next 6-8 years.

- Assisting the growth of existing public health training institutions/departments and facilitating their evolution into major institutes of public health.

- Establishing a strong national research network of public health and allied institutions which would undertake policy and programme relevant research that will advance public health goals in prioritized areas with suitable international partnerships wherever useful and appropriate.

- Engaging public health expertise to collectively undertake analytical work for generating policy recommendations related to public health action, in not only the health sector but also in all other sectors which impact the health of the people, and developing a vigorous advocacy platform to effectively communicate these recommendations to policy makers and other relevant stakeholder groups (including civil society organizations which represent the interests of people's health).

- Facilitating the creation of an independent accreditation body for degrees in public health which are awarded by training institutions across India.

ACHIEVEMENTS SO FAR

Establishment of the Indian Institutes of Public Health (IIPH)

- The first three IIPHs in Delhi, Gandhi Nagar and Hyderabad are fully functional since 2008 and multiple post graduate diploma programmes, short term trainings, and research projects have been initiated.

- Memorandum of Understandings for establishment of IIPHs has been signed with the State Governments of Andhra Pradesh, Gujarat, Delhi, Meghalaya and Orissa.

- Possession of land has been taken over in Delhi and Gandhi Nagar. Land has been identified in Hyderabad and Orissa for IIPH. Architectural design of these campuses is being finalized.

- Discussions are in the advanced stages with the Governments of Tamil Nadu, Kerala, Uttarakhand, West Bengal and Punjab for establishment of other IIPHs.

Academic programmes being delivered in 2010-11

- Post Graduate Diploma in Public Health Management at IIPH Gandhi Nagar, Hyderabad, Delhi.
- Post Graduate Diploma in Health Economics, Health Policy and Health Care Financing.
- Post Graduate Diploma in Bio-statistics and Data Management.
- Post Graduate Diploma in Clinical Research on campus and in distance learning mode.
- Post Graduate Diploma in Epidemiology in distance learning mode.
- Post Graduate Diploma in Public Health Nutrition in distance learning mode.
- Post Graduate Diploma in Health Promotion in distance learning mode.

The Masters in Public Health, a two year residential programme will be launched in 2011. This two year masters program which is internationally cutting edge, academically sound and yet context specific, has been developed after numerous national and international consultations, deliberations and iterations by a large number of subject specific experts. It aims to promote public health research in institutional and field settings. This peer reviewed curriculum is complete and aims at preparing health professionals to work in socially, culturally and economically diverse populations by being attentive to needs of vulnerable and disadvantaged groups.

In-Service training

- Field Epidemiology Training Programmes are ongoing for 60 District Surveillance Officers under the Integrated Disease Surveillance Project (IDSP).
- A Distance Learning programme, for 700 epidemiologists under the Integrated Disease Surveillance Program (IDSP) has been developed in partnership with the London School of Hygiene and Tropical Medicine and is set to be delivered jointly with several partner institutions in India.

- Induction Training in Management for District Vector Borne Disease Control Programme Consultants supported by the National Vector Born Disease Control Programme.

- Developing and implementing Training Programmes In Monitoring and Evaluation (M&E) and strengthening capacity to conduct M&E activities, supported by the University Of North Carolina (USAID).

- Certificate Course in Evidence Based Diabetes Management supported by Merck Sharp and Dohme (MSD).

Centers of Excellence established by Public Health Foundation of India

- South Asia Network for Chronic Diseases (SANCD): The South Asia Network for Chronic Diseases in India is a collaborative venture between the Public Health Foundation of India and constituent colleges of the Well-come Trust Bloomsbury Centre for Clinical Tropical Medicine.

- Centers of Excellence in Global Health Activities in Developing Countries To Combat Non-Communicable Chronic Cardiovascular And Pulmonary Diseases.

- Under the Global Health Initiative of National Heart Lung and Blood Institute (NHLBI), National Institutes of Health (NIH) USA, PHFI has received support to establish a 'Centre of Excellence (COE) in Prevention and Control of Cardio metabolic Diseases (CMD) in South Asia for Applied Research and Training'. The Center of Excellence will serve as one of 11 Collaborating Centers of Excellence to counter chronic on-communicable diseases in developing countries.

- South Asia Centre of Excellence for Vision and Disability, SACVAD – A collaboration between PHFI and the London School of Hygiene and Tropical Medicine is the first such Institute to have been developed in India. The Centre will be located at the Indian Institute of Public Health (IIPH) at Hyderabad, Andhra Pradesh and SACVAD is envisioned to be a Research, Education, Advocacy and Policy (REAP) Centre for Vision and Disability.

- Ramalingaswami Centre of Excellence in Social Determinants of Health – This Centre has been established with funding from the V. Ramalingaswami Foundation. The work at this Centre builds upon the research work started at the Public Health Foundation of India to "Synthesize evidence on the social determinants of health to inform research and policy in India" that is supported by a recent grant from the UK-based BUPA Foundation.

MAJOR GRANTS RECEIVED

- NACO Capacity Building Grant: The Bill & Melinda Gates Foundation (BMGF) awarded $18 million to PHFI for providing technical assistance and capacity building support to the efforts of the National AIDS Control Organization (NACO) under the NACP III.

- Advancing Advocacy for the Realization of Health in India (AAROHI): A focused initiative supported by the Bill Melinda Gates F ($ 2 million), aimed at a strengthened advocacy action platform to address maternal deaths, child under-nutrition and the lack of effective immunization coverage in Bihar and in-country. AAROHI's efforts include political mobilization and advocacy, catalyzing media-based action and strengthening the foundation of public health information and knowledge.

- Wellcome Trust Capacity Building Grant: The Wellcome Trust, UK has awarded £ 5 million to PHFI for capacity building of future faculty and kick-starting a quality research environment in India. This grant will support the training of 16 MPH, 27 PhD and 35 postdoctoral candidates (under the PHFI future faculty programme) at partner schools in the UK and offer 23 seed research grants to IIPHs.

- Assessing And Supporting Norway India Partnership Initiative (NIPI) Interventions – The Norwegian Ministry of Foreign Affairs has awarded PHFI a grant of $724,000 for assessing and supporting NIPI interventions in India. The study is designed to use a multi-disciplinary approach in order to assess current interventions through a gender and equity lens in the states of Rajasthan and Orissa.

- Assessment Of HIV Incidence and its Determinants in a Population-Based Longitudinal Cohort Study In India – Awarded to PHFI by Centre Hospitalier Affilie Universitaire de Quebec (CHAUQ) (National Institutes of Health, USA) for $ 716,115.

- Developing Case Studies of Innovations In Public Health For Competency Strengthening And Advocacy - $ 500,000 grant awarded to PHFI by Mc Arthur Foundation. The overall goal of the project is to strengthen institutional capacity towards accelerating decline in maternal mortality ratio and, over time, to sustain a very low maternal mortality regime through appropriate technical, programmatic and organizational responses.

1.2 My Managerial tasks: Based on my clinical experience and health management background, I was selected as a Program Coordinator located at Program Secretariat for "Certificate Course in Evidence based Diabetes management" which is going to be launched by Public Health Foundation of India in August 2010.

This project aims at improving the access of Indian population to effective diabetes care for, (1) Developing a curriculum and course module for 1-year, once a month part-time (combination of reading modules and monthly contact points of 4 to 6 hour duration each), advanced level training on management of diabetes to primary care physicians and (2) Rolling-out the course as a certification program by establishing city/town level networks between in interested primary care physicians as trainees and diabetes care specialists as training faculty. It is intended to roll-out the program by forming 200 such networks, each between an individual training faculty and 10 primary care physicians, thus covering 2000 primary care physicians spread over 71 cities in 20 states of India in a year.

1.3 My Role as Program Coordinator for the Program Secretariat is to support Program management.

The TORs are as follows:

- Serve as a point person for Program Activities and reporting to Program Manager.

- Management and coordination of all components of Evidence Based Diabetes Management training program conducted in the framework of an inter-disciplinary multi-partner collaboration across the country.

- Serve as focal point for the program secretariat for communication with renowned National Faculty, Regional Training Centers (Faculty and Participants) and Partner Institutions.
- Play an integral role in organizing and managing resource intensive National and Regional Level Meetings; this involves human resource and logistical issues.
- Oversee overall field operations related to implementation of the program (i.e. invitations, enrollments, regional meetings and workshops, documentation, visit coordination, workshop planning, etc).
- Prepare and disseminate an advanced program implementation plan including critical key activities and milestones, time lines, resource requirement and utilization plan for key components, structure/mechanism to identify bottlenecks, develop algorithms to keep track of process and progress of program.
- Prepare and disseminate in-advance micro-plans for regional faculties and participants for perfect conduct of training sessions at regional centers across the country with seamless networking for real time coordination and communication between partners.
- Coordinate with the partners, sponsors, national and regional faculty and trainees to ensure that critical issues are addressed in a timely manner.
- Conduct spot and random checks and monitoring field visits for quality assurance.
- Attend and participate in stakeholders meetings, and other meetings as needed.
- Report on a day to day basis to the Project Manager regarding project progress and seek timely advice wherever necessary.
- Contribute to writing documentation papers and reports.
- Literature review: Work on the project in detail to gather information in relation to status of Certificate course for Evidence based Diabetes Management running in India.
- Any other task as assigned by the Project Director or Director Indian Institute of Public Health, Delhi.

1.4 Reflective learning during the Internship

It is a great learning experience for me. The job is giving me an opportunity to practice the management skills learnt during my course in Health Management from International institute of Health Management and Research (IIHMR) established in the month of October 5, 1984 under Societies Registration Act 1958. The Institute aims at contributing to social equity and development through its commitment to supporting programmes aiming at poor and the deprived people.

After I got selected in Public Health Foundation of India I had an golden opportunity to work under the guidance of my Project Director Dr. Abhay Saraf who taught me all about Project Management.

PART -II

DISSERTATION ON "STATUS OF DIABETES CERTIFICATE COURSES FOR MEDICAL PROFESSIONALS IN INDIA"

Chapter 1: INTRODUCTION

Current Status and Prevalence of Diabetes in India

Problem Statement

Diabetes mellitus often referred to as **diabetes**—is a condition in which the body either does not produce enough, or does not properly respond to, insulin, a hormone produced in the pancreas. Insulin enables cells to absorb glucose in order to turn it into energy. This causes glucose to accumulate in the blood (hyperglycemia), leading to various potential complications. Diabetes reduces both a person's quality of life and life expectancy and also imposes huge economic burden on families and health system. [1]

Diabetes is a metabolic disease characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both (American Diabetes Association 2004).Major types of Diabetes include:

Type I Diabetes: It results from destruction of the beta cells in the pancreas, leading to absolute insulin deficiency, usually occurs in children and young adults and requires insulin treatment. [1]

Type II Diabetes: It is usually characterized by insulin resistance in which target tissues do not use insulin properly. It accounts for approximately 85 to 95 percent of all diagnosed cases. [1]

Gestational diabetes: First recognized during pregnancy it resembles type II 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 II diabetes later in life. Even though it may be transient, untreated gestational diabetes can damage the health of the fetus or mother.

Other rare types of diabetes include those caused by genetic conditions, surgery, drug use, malnutrition, infections, and other illnesses.

Diabetes Management tools include, Interventions directed to prevent the disease, to detect the disease in asymptomatic stage, and to manage the disease to reduce complications. The Cost of Diabetes in India (CODI) study estimated mean total annual cost of diabetic management to be Rs 21,408, with direct annual cost for out-patient diabetes care being Rs 4724. [1]

Consequences of Diabetes

Diabetes increases the risk of heart disease and stroke. 50 percent of people with diabetes die of cardiovascular disease (primarily heart disease and stroke). Combined with reduced blood flow, neuropathy in the feet increases the chance of foot ulcers and eventual limb amputation. Diabetic retinopathy causes blindness, and occurs as a result of long-term accumulated damage to the small blood vessels in the retina. After 15 years of diabetes, approximately 2% of people become blind, and about 10% develop severe visual impairment. Diabetes is among the leading causes of kidney failure. 10-20% of people with diabetes die of kidney failure.

Diabetic neuropathy is damage to the nerves as a result of diabetes, and affects up to 50% of people with diabetes. Common symptoms are tingling, pain, numbness, or weakness in the feet and hands. The overall risk of dying among people with diabetes is at least double the risk of their peers without diabetes. [2]

Challenges in Diabetes management

Epidemics of non-communicable diseases are presently emerging or accelerating in most developing countries. Diabetes is a management challenge because of long latency, multi-organ involvement and need for long-term care. Physicians are not always aware of the most effective interventions; spend more time on 'acute' management than 'chronic' care.[3] Diabetes has emerged as a major health care problem in India. According to the Diabetes Atlas published by the International Diabetes Federation (IDF), there are an estimated 40 million persons with diabetes in India in 2007 and this number is predicted to rise to almost 70 million people by 2025 by which time every fifth diabetic subject in the world would be an Indian. [10].

The bar diagram giving the number of diabetics in India in year 2000:

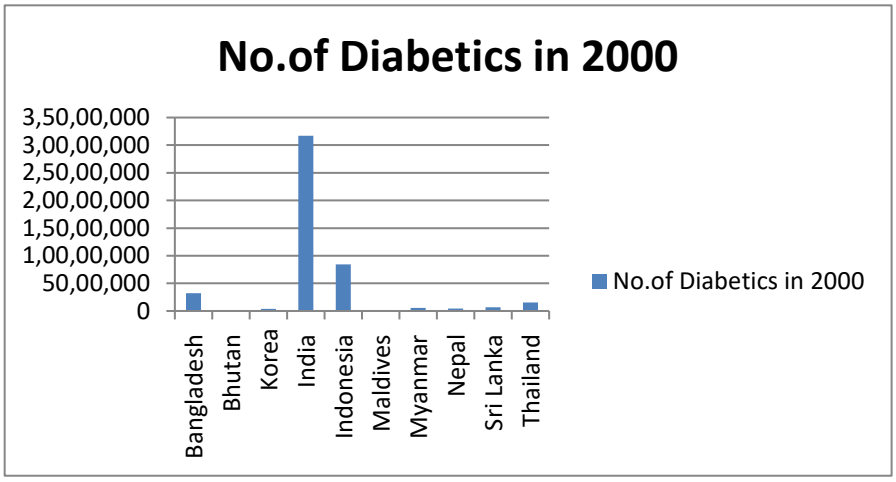


Fig 1.1 Representing the prevalence of Diabetes in year 2000.

The data above is showing the existing rising burden of non communicable disease especially diabetes in developing countries like India who is heading among the other countries and is having the highest number of diabetics in the world. The real challenge is the existing mismatch between the health care need and available resources.

The bar diagram giving the number of diabetics in India in year 2030:

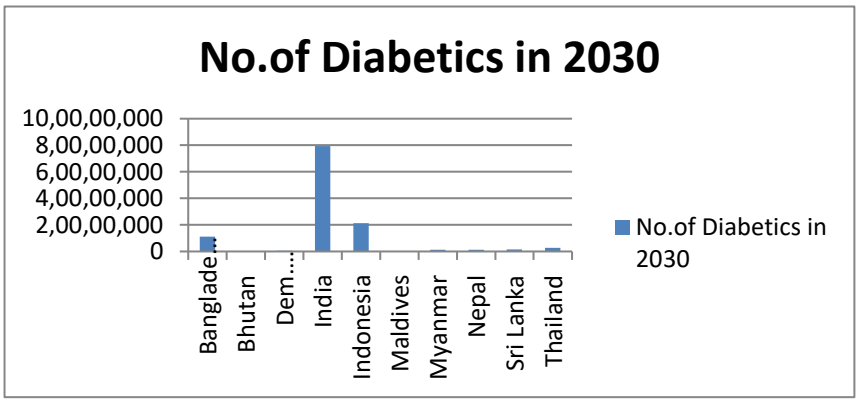


Fig 1.2 Representing the prevalence of Diabetes in year 2030.

Source: WHO website

Findings of Fig 1.2: The above table is the clear picture of India as a diabetic capital of the world in which estimate of diabetics is 75 million and above who will be affected till 2030. The

double fold increase in coming Years till 2030 would be as such that every fifth Diabetic in the world would be an Indian. [10]

Genetic predisposition combined with life style changes, associated with urbanization and globalization, contribute to this rapid rise of diabetes in India. This means that, in the next 10 – 20 years, productivity of the youth of our country could be seriously affected. [10, 11] Due to these sheer numbers, the economic burden due to diabetes in India is among the highest in the world.[12]

The real burden of the disease is however due to its micro and macro vascular complications which lead to increased morbidity and Lack of national guidelines, diagnostic algorithms, treatment protocols for decision making and absence of quality assurance mechanisms in Diabetes care. Constraints of the health system in terms of lack of manpower trained in diabetes care and institutional capacity for diagnosis, prevention and management. [1]

Among the major health transitions witnessed in the second half of the twentieth century, the most globally pervasive change has been the rising burden of non communicable diseases. This has given rise to new challenges of providing acute and chronic care for non communicable diseases, especially in poor countries such as India with an already existing mismatch between health care needs and resources. Existing health systems need to be reorganized, reoriented, and recruited to deliver the expanded mandate of health care involving the prevention, surveillance and management of chronic diseases. [3]

India faces a huge burden from diabetes. National capacity for management of diabetes has to be strengthened by improving knowledge of physicians treating diabetes, especially in semi urban and rural areas. Diabetes Management tools include, Interventions directed to prevent the disease, to detect the disease in asymptomatic stage, and to manage the disease to reduce complications. Diabetes reduces both a person's quality of life and life expectancy and also imposes huge economic burden on families and health system. [1]

With India having the highest number of diabetic patients in the world, the sugar disease is posing an enormous health problem in the country. Calling India the diabetes capital of the world, the International Journal of Diabetes in Developing Countries says that there is alarming rise in prevalence of diabetes, which has gone beyond epidemic form to a pandemic one. Of all

chronic non-communicable diseases, diabetes is associated with the highest co-morbidities and complications. In 2007, diabetes resulted in 3.8 million deaths globally (6% of world mortality), the same figure as HIV/AIDS. [7]

The total number of people with diabetes is predicted to rise to about 300 million by 2025, with one-third of affected individuals living in India and China alone. The largest increases in the diabetic population in developing countries are projected to be in the most economically productive age groups. [5]

The International Diabetes Federation estimates that the number of diabetic patients in India have more than doubled from 19 million in 1995 to 40.9 million in 2007. It is projected to increase to 69.9 million by 2025. Diabetes affects all people in the society, not just those who live with it. The World Health Organization estimates that mortality from diabetes and heart disease cost India about $210 billion every year and is expected to increase to $335 billion in the next ten years. These estimates are based on lost productivity, resulting primarily from premature death. **[6]**

Various studies have shown that the high incidence of diabetes in India is mainly because of sedentary lifestyle, lack of physical activity, obesity, stress and consumption of diets rich in fat, sugar and calories. The most prevalent is the type II diabetes, which constitutes 95 per cent of the diabetic population in the country. In this, patients are non-insulin dependent and they can control the glucose in their blood by eating measured diet, taking regular exercise and oral medication. Worldwide, millions of people have type II diabetes without even knowing it and if not diagnosed and treated, it can develop serious complications. [6] There are several studies from various parts of India which reveal a rising trend in the prevalence of type II diabetes in the urban areas. A National Urban Survey in 2000 observed that the prevalence of diabetes in urban India in adults was 12.1 per cent per cent. The crude prevalence rate of diabetes in urban areas is about 9% and that the prevalence in rural areas has also increased to around 3% of the total population. [7]

Epidemiological spread of diabetes based on study done on four regions of India.

Source Article by Dr. V. Mohan

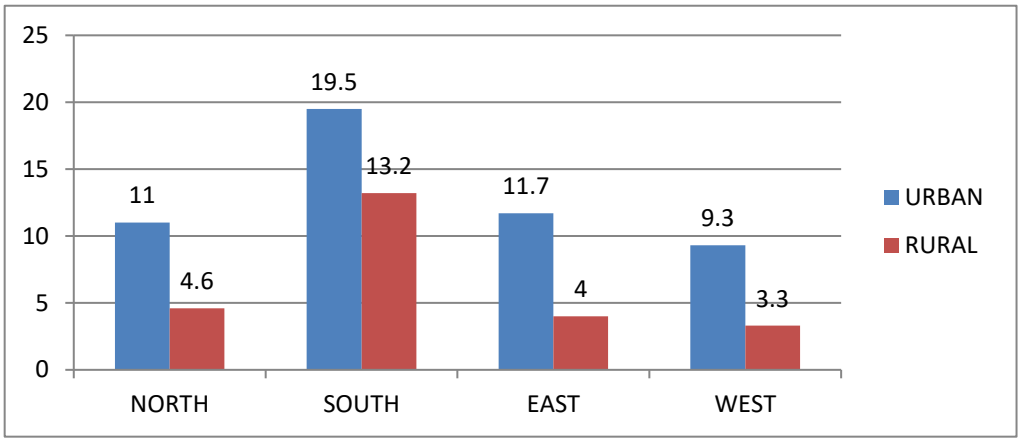


Fig 1.3 Epidemiological studies of type II diabetes in Rural-Urban regions of India. [14]

Findings: The prevalence of diabetes as per the division of India into four major zones: East, West, North, South further divided into the urban and rural part .As per the data above the southern part of India has high prevalence rate of diabetes in both Urban and rural region , followed by North, East and then Western part of India . This clearly signifies that the prevalence in rural part is equally challenging and there is urgent need of skilled task force of General physicians who are first contact point serving in periphery ,they need to be educated and well trained .

National and International Response

National Programme for Prevention and Control of Diabetes, Cardiovascular Diseases and Stroke (NPDCS): The objective is risk reduction for prevention of NCDs and early diagnosis and appropriate management of Diabetes, Cardiovascular Diseases and Stroke The strategy is to introduce health promotion for their respective organisations by identifying peer educators and providing initial training.

Government of India's new pilot National Programme under National Rural Health Mission (NRHM) to address the emerging threat of non communicable diseases has been launched recently.

Diabetes Action Now: a joint initiative the World Health Organization and the International Diabetes Federation to stimulate and support the adoption of effective measures for the surveillance, prevention and control of diabetes. A key aim of the programme is to achieve a substantial increase in global awareness about diabetes and its complications. [1]

The Indian Task Force on Diabetes Care In India has been formed by a group of around 300 practicing doctors with a predominant interest in diabetes and has an International Advisory Board consisting of eminent members of the International Diabetes Federation (IDF) and the World Health Organization (WHO).

Guidelines for the management of Diabetes Mellitus Type II in the Indian context have been developed through a joint consultation by the Indian Council for Medical Research (ICMR) and WHO. [1]

WHO aims to stimulate and support the adoption of effective measures for the surveillance, prevention and control of diabetes and its complications, particularly in low and middle-income countries? To this end, WHO:

- Provides scientific guidelines for diabetes prevention;
- Develops norms and standards for diabetes care;
- Builds awareness on the global epidemic of diabetes; including partnership with the International Diabetes Federation in the celebration of World Diabetes Day (14 November);
- Conducts surveillance of diabetes and its risk factors.

The WHO Global Strategy on Diet, Physical Activity and Health complements WHO's diabetes work by focusing on population-wide approaches to promote healthy diet and regular physical activity, thereby reducing the growing global problem of overweight and obesity.[8]

The Guidelines of the International Diabetes Federation Task Force on Clinical Guidelines, which is focused on meeting the critical global need to provide up-to-date evidence-based information and training for healthcare professionals. This is especially important as, alarmingly,

the latest data from the IDF Diabetes Atlas show that over 285 million people worldwide now live with diabetes. Within 20 years, IDF predicts the figure will jump to 435 million. Healthcare professionals must be equipped with the latest improvements and standards in diabetes care to tackle this spiraling epidemic. [9] Simultaneously effective low-cost case management strategies are required for persons who manifest disease.

Common to most NCDs, through lifestyle linked community programmes has been demonstrated both in developed and developing countries. Such population strategies require both 'bottom-up' (community health Education and empowerment) and 'top-down' (legislation and regulation) approach. The 'essential' package of services must be integrated into the existing health care infrastructure, by involving care providers, of all categories at various levels of care. [3]

The involvement of the public sector, which provides a large part of the care in the India, is possible only when the governments decide to adopt a programme for integrated control of chronic diseases. The resistance of governments to commit scarce financial and human resources to chronic care must be overcome by informed advocacy by health professionals and community representatives. The private sector is usually responsive to the needs of chronic care, since such services are considered financially remunerative. However, the imbalances in the type of care provided (arising from frequent use of high cost, low yield technologies) must be corrected.
Diabetes care is not explicitly part of the roles and responsibilities assigned to health personnel in the rural health care set-up, nor in pre and in-service training of personnel. Testing for blood glucose does not form part of the standard tests available in Primary Health Center and Community Health Centers, and supplies for this test are not part of the central supply list. [4]

Education and training of health care providers, of diverse categories, would need to be modified in order to enhance the levels of their learning and skills as relevant to chronic disease prevention, surveillance, and management. A review of present training programmes should be undertaken to identify areas which need to be added or strengthened. Current training programmes for health care providers do not equip them adequately to deliver appropriate chronic care. [3]

Chapter 2: RESEARCH METHODOLOGY

Research Problem: The numbers of people with diabetes will be more than double over the next 25 years, Diabetes reduces both a person's quality of life and life expectancy and also imposes huge economic burden on families and health system. National capacity for management of diabetes has to be strengthened by improving knowledge of physicians treating diabetes, especially in semi urban and rural areas. Training programs should be launched to provide doctors with the necessary skills which enable them to provide appropriate diabetes care. The practical management of Diabetes in developing country like ours is difficult due to the scarcity of the health care personnel especially in more remote areas. The data from Medical Council of India suggests that there is less number of MD/DM doctors who are qualified within year. The qualified ones remain restricted with the clinical practices in urban areas. The medical fraternity requires to gear up to this challenge for effectively preventing, diagnosing and treating diabetes in large number of individuals, families and communities. Those who already have expertise in diabetes care should be trained to adapt their skills to educate others.

Chronic shortages of doctors in rural India six decades after Independence remain a worry. The number of MBBS seats in India is less than 31,298 today which is far from adequate. . The Medical Council of India currently recognizes 273 Indian medical colleges, with a total capacity to train 31,298 Indian medical students. According to the Medical Council of India, the allopathic doctor-population ratio at present works out to 1:1722.[16] The doctor-per-person ratio (including practitioners of Western medicine, Homeopathy, and Indian systems of medicine) is one-to-870, according to the Indian government. If the practitioners of non-Western medicine are excluded, the ratio increases to 1:1.634. The ratio is different for emergency, ICU and Critical Care Unit. Ideally the doctor-patient ratio should be 1:2.

The challenge before the government is straightforward: it is to increase the MBBS-level intake manifold, rationalizing the process of setting up medical colleges as there is already shortage of highly qualified manpower especially MD,DM ,endocrinologists The ultimate objective of educational programmes should be to provide participants (Medical doctors) with the skills necessary for efficient patient care. The physicians are not trained to follow an evidence-based, guideline approach that is contextually appropriate and cost-effective .These deficiencies need to

be addressed, through an in-depth review of the curriculum as well as the training methodology, so as to appropriately strengthen the learning process in terms of chronic care delivery system.

RESEARCH DESIGN AND METHODS – The secondary data was collected from internet, available literature, articles from PHFI and IIPH library. Discussions with various stakeholders and visits to two centers in Chennai conducting such certificate courses on diabetes were undertaken.

Data source: Data from internet websites of WHO, International Diabetes Federation , Diabetes Association of India, Medical Council of India etc; was accessed, and information of various diabetes courses was collated. Interviews of the eminent the endocrinologists, personal discussions with course directors of some institutions running such courses, visiting two centers who offer short term courses on diabetes and discussions with my guide and Director of Indian Institute of Public Health- Delhi were extremely useful as rich source of information and feedback .

All the institutions, academic bodies, colleges, universities, professional associations offering certificate courses on Diabetes for medical professionals and key Endocrinologists from the country comprised the sampling frame.

Data collection procedure: Interviews of key Diabetologists and Endocrinologists and Course Directors with structured, pretested questionnaire were conducted. The secondary data was collected from website of relevant organizations offering courses, collated and analyzed in terms of duration, eligibility criterion, fees etc.

Chapter 3: RESULTS

The various institutions running the certificate courses of diabetes management for doctors are as follows:

Madras Medical College

Course Name: Certificate Course in Diabetes.

Introduction: Madras Medical College has launched a six-month certificate course in diabetes, aimed at rural doctors. The course will dwell on the current trends in treating diabetes.

Duration: Six-month certificate course in diabetes.

Eligibility criteria: Rural Doctors (General physicians).

Course curriculum: Diabetes mellitus, Acute complications, Chronic complications, Gestational Diabetes treatment.

Research Society for diabetes Study in India, University College of Medical Sciences, New Delhi

Course Name: Certificate Course in Diabetes.

Introduction: Research Society for Study of Diabetes in India (RSSDI) was founded by Prof. M.M.S. Ahuja who conceived the idea for establishing the society for ensuring academic activity and research and holding scientific meetings, and providing training facilities for research.

Duration: 1 year for candidates with MBBS / MD degree.

Eligibility criteria /Criteria for accreditation: MBBS/MD, two candidates enrolled per a teacher.

Course curriculum: Epidemiology of Diabetes Mellitus (DM), Classification of Diabetes – Mellitus (DM), Normal glucose metabolism, Aetio-pathogenesis, Clinical features and examination in patients, Diabetes Mellitus, Diabetes in special situations.

Coimbatore Diabetes Foundation, Tamil Nadu

Course Name: Clinical Diabetology Training Program.

Introduction: CDF was established by Dr. V. Sekar in 1991. The institution has been awarded the prestigious ISO 9001-2000 Certificate recognition of its service on par with international standards in the field of diabetes, its prevention and control.

Duration: 6 months course.

Eligibility criteria: MBBS Doctors who have registered with Medical Council or Medical Council of India only are eligible.

Course Curriculum: Prevalence, Diagnosis, Classification of diabetes, Diabetes Patho-physiology, Metabolic changes Diabetic Ketoacidosis, Pharmacological Management, Insulin, Self Management diabetes and its complications ;The role of health care professional in diabetes and management Teaching and learning, Diabetes and pregnancy.

All India Institute of Diabetes Research, Ahmedabad

Course: Certificate Course in Diabetology.

Introduction: It is one of the recognized branches of Gujarat University inclined in running various courses in Diabetes.

Duration: 6 months course.

Eligibility criteria: MBBS (General Physicians).

Course Curriculum: Diabetes mellitus, Acute complications, Chronic complications, Gestational Diabetes treatment.

AKN Sinha Institute, Patna

Course: Post Graduate Certificate Course in diabetes management.

Introduction: AKN Sinha Institute of Continuing Medical & Health Education and Research was established by a resolution of the Central Council of Indian Medical Association with the main objectives of imparting Continuing Medical and Health Education, conducting Research and organizing Certificate Courses for medical graduates.

Duration: 100 Credit Hours.

Eligibility criteria: MBBS (General Physicians).

Course Curriculum: Diabetes Mellitus, Management of Diabetes Mellitus, Oral Medication for Type 2 Diabetes Insulin therapy in Type 2 Diabetes Insulin, Management of Type 1 Diabetes Mellitus, Hypoglycemia, Acute complications in Diabetes, Special problems in women with Diabetes.

Medversity, Apollo Hospital

Course: Certificate Course in Diabetes.

Duration: 6 months Course.

Introduction: Medvarsity, India's first virtual medical educational portal was established in April 2000 as a joint venture by Apollo Hospitals & NIIT. Medvarsity in association with Apollo Hospitals conducts online courses for medical & paramedical community.

Eligibility Criteria: MBBS Post Graduates Students in Medical Specialties.

Course Curriculum: Diagnosis of Diabetes Mellitus, Management of Diabetes Diabetic Complications, Hospital Care, Gestational Hyperglycemia and Diabetes.
Diabetes – Treatment Principles, Patient Empowerment and Management of Complication etc.

MV hospital and Diabetes Research Center WHO Collaborating Center for Research, Education and Training in Diabetes, Chennai

Introduction: The center was established on 1st August 2002. The terms of reference include of the center are to strengthen the education and training in diabetes research, prevention and control**.**

Course: Diabetes certificate course.

Duration: 24 months Course.

Eligibility Criteria: MBBS/Post Graduates Students in Medical Specialties.

Course Curriculum: Diabetes, Complications, Prevention and care**.**

Public Health Foundation of India at IIPH Gurgaon

Introduction: The Public Health Foundation of India (PHFI) was conceptualized as a response to emerging public health challenges in India.

Course: Public Health Foundation of India is launching an Evidence based diabetes certificate course. This project aims at improving the access of Indian population to effective diabetes care.

Course curriculum: Twelve modules covering the following topics

1.Introductory Overview of Diabetes Mellitus
2. Metabolic Abnormalities in Type 2 Diabetes
3. Presentation & Initial Evaluation of Type 2Diabetes
4. Approach to Treatment of Type 2 Diabetes: Part 1
5. Approach to Treatment of Type 2 Diabetes: Part 2
6. Non-Pharmacological Adjunct Treatment Measures
7. Acute Complications of Type 2 Diabetes
8. Chronic Complications of Type 2 Diabetes
9. Special Complications of Type 2 Diabetes
10. Special Topics in Care of Patients Type 2 Diabetes
11. Other Types of Diabetes Mellitus

I2.- Clinic Record Maintenance

Duration: 1 year course with 12 monthly contact sessions.

Eligibility Criteria: MBBS with 5 years clinical experience/MD (internal Medicine)

It is clear from above that limited number of courses is available for the doctors. The available ones require full time attendance for longer periods. The number of people with diabetes will rise

more than double fold in India, who will become the capital country of diabetes so much so that every fifth diabetic in the world would be an Indian. [6] India has a huge gulf between the health system and present human resource available.

The website of Diabetic Association of India states that there is low awareness about disease among public health care professionals as well. The health system of India has lacunae; the primary healthcare has still not geared up in many states. According to the Medical council of India MBBS seats in India are 31,298 which is far from adequate .The seats for MD/DM are even more less for handling the present upsurge of diabetes. Similarly, doctors with specialized degree are concentrated mainly in urban areas leaving behind the major population of India which is underserved. The diabetes prevalence is now ubiquitous, in urban as well as rural areas; in all these places the general practitioner has a role in identifying and managing diabetes.

Minutes of meeting held on 14th March 2010, with eminent Diabetologist regarding the launch of evidence based diabetes certificate course –

- During the meeting the doctors emphasized upon the overall content, criteria of selection of the ones who would study the courses, duration, assessment criteria of such courses. They said that the participants should be trained enough in order to increase their awareness level and improve their skills.
- The prevention part should be more stressed upon, lifestyle modification is critical issue overall standardized care should be part of the content.
- Case studies should be there so as make course interesting and clinical based.
- As per them more importance should be on rigid control, greater would be the prevention of micro and macro vascular complication. Diet and physical activity are under promoted by doctor, this is also the reason for the therapeutic failure,lifestyle modification, diet control, and physical activity.
- They also impressed upon that the adjunct pharmacological approach is not appropriate; it miscommunicates and undermines the role of lifestyle changes and prevention.

- They said the trainers should be carefully selected to teach the participants, they should have MD, DM qualification with excellent clinical skills and high level of awareness.
- As per their opinion the assessment is a must for the participants.
- They strongly emphasized on need of such short term management courses for diabetes management.
- As per their suggestion the criteria for selection of participants should be MBBS with minimum 5 years of experience and MD with clinical experience.

Conclusion and recommendations: Aim and objective of launching the short term certificate courses should be to provide skilled based education with the help of trained faculty and have a pre and post assessment of participants so that by the end ,the quality of course is not compromised at any level. The knowledge so gained could be applied by the trainee on daily basis, also gets recent updates and resolve query in each contact sessions directly from the highly qualified Faculty. The agenda is to reach out for maximum populations with in minimal span of time with this skilled group of task force who are prepared to apply the best interventions.

Interviews of Eminent Doctors: Requirements for Certificate Course

Sr. No.	Response	Number	Percentage
1	MBBS	12	80%
2	Skilled based knowledge	11	70%
3	MBBS with 3-5 years experience and MD	12	80%
4	One year/ 12 monthly contacts on Sundays	12	80%
5	More case studies as content	13	90%
6	Highly qualified faculty as trainers	14	100%
7	Assessment at the end of course	11	70%
8	Mid-term exams	7	40%
9	Pre test post in sessions	12	80%
10	Course open to all medical fraternity	10	60%
11	Lifestyle modification measures to be taught more strongly	11	70%
12	Charging Fees for the participants	10	60%
13	More interactive sessions during the training period	12	80%
14	Strict monitoring and evaluation during sessions	14	90%

As per the table above the preference for the MBBS doctors is more evident as they are the ones who are not always trained and aware of the most effective interventions. Diabetes management is more challenging as the number of doctors with higher qualifications (MD, DM endocrinologists) is less and if available serve in the urban cities as such the major rural part of India remains underserved. Hence the challenge is to curb the disease with existing team of physicians available by educating them by short term courses with on job training so as to enhance their skills and awareness in short span of time. The trainers should be skilled enough to

teach the trainee and who as per their discussion should be MBBS with minimum 5 years of experience, there should be standardized assessment criteria at end of every contact session. The courses should include cases studies, presentations to make session interactive and clinical knowledge based.

Visit at the Centers conducting certificate courses: The experience of the visit was quite inspiring, the centers have good acceptance level ,each year 200-300 students are qualified and the dropout rate is minimum i.e. less than 10%. They have monthly contact sessions were the training is conducted by trained faculty .The participants consists of heterogeneous group of MBBS/MD/ DGO/MS of different medical streams with varied age groups ranging from 25 to 65 years all keen in getting the knowledge of advanced diabetes management and they themselves want to efficiently handle the cases of diabetes who form the major share of their patients that they regularly come across .

Public Health Foundation of India is launching an Evidence based diabetes certificate course.

This project aims at improving the access of Indian population to effective diabetes care,

(1) Developing a curriculum and course module for 1-year, once a month part-time (combination of reading modules and monthly contact points of 4 to 6 hour duration each), advanced level training on management of diabetes to primary care physicians.

(2) Rolling-out the course as a certification program by establishing city/town level networks between interested primary care physicians as trainees and diabetes care specialists as training faculty.

(3) In the first year of implementation, it is intended to roll-out the program by forming 200 such networks, each between an individual training faculty and 10 primary care physicians, thus covering 2000 primary care physicians spread over 71 cities in 20 states of India.

(4) Its going to be monthly contact session during which the course would be taught by regional eminent diabetologist.

(5) The size of the group of trainees is small so as to focus on 10 participants per session

(6) The contact sessions are for twelve months during which the course would be made interesting by adding case studies, presentations group discussion.

(7) The aim of discussion was to bring best possible approach in teaching the participants in monthly contact sessions who are keen in getting evidence based knowledge and skills.

Discussion with director of PHFI and Director of diabetes project: As per the discussion the project launched by Public health foundation of India aims at improving the access of Indian population to effective diabetes care. An educational intervention, therefore, can be as important and effective as a pharmacological intervention and should be used alongside all therapeutic options. They also stressed upon the task of diabetes educators who plays a vital role in helping people to translate knowledge into effective self-care behaviour. This is measured in terms of healthful behaviour, quality of life and other factors. They laid emphasis upon On job training approach as short term measure to educate and bring awareness in medical professionals by a highly skilled Faculty .The Government should aim and support in launching such short term courses to provide participants with the skills necessary to provide appropriate diabetes care to patients with diabetes. The courses or program are by and large to provide a basic structure, to enable the candidates to understand path-physiology, investigative methods and therapeutic applications in the field of diabetes - with emphasis on applied or practical aspects of diabetes

Chapter: 4

CONCLUSION AND RECOMMENDATIONS: The alarming rise in the burden of Non – communicable disease in this century is the major transition. This has given rise to new challenges of providing acute and chronic care for non communicable diseases, especially in poor countries such as India with an already existing mismatch between health care needs and resources. There is extreme shortage of manpower to deal with the present critical issues one such being diabetes.

Diabetes is a major health care problem in India with an estimate of more than 40 million people suffering at present and is predicted to rise more than double in coming years. Being a chronic lifestyle related disease ,it requires a long term care and support As per the research problem diabetes is costly disease , if left unchecked diabetes and its associated complications can result in alarming social and economic consequences .

Constrains of the health system in terms of lack of manpower trained in diabetes care , prevention and management suggests that there is urgent need of taking initiatives to train the medical professionals since the already existing are not aware enough with the most effective interventions and tend to spend more time on acute management then chronic care. The study done shows that there is scarcity of doctors with expertise like MD/DM endocrinologist who are very few. The limited number of these doctors is mostly confined to the urban regions only. Thus leaving behind the 70 % of rural population of India underserved .The population in periphery is mostly catered by General physicians who are the first point of contact but not skilled and trained enough. Hence the need of the hour is to train the doctors with short term courses. The courses should be based on evidence and skilled based knowledge accessible to all categories of doctors with different streams. So, that the urgent need for managing diabetes is reasonably met.

The training for physicians should be on Job training as majority of courses require full time commitment and that is not possible for all doctors in practice to accept. These deficiencies need to be addressed, through an in-depth review of the curriculum as well as the training methodology, so as to appropriately strengthen the learning process in terms of chronic care delivery system measure for saving millions of lives.

The diabetes certificate courses are already running in India by various institutions and organization who are teaching ,training even the heterogeneous group of doctors who even if coming from different streams are keen to enhance their skills, knowledge for managing diabetes. There is a need for strong advocacy for such diabetic education programs run by trained experts.

Similar initiative has been taken by Public Health Foundation of India who is going to launch certificate course on evidence based diabetes management ,a programme which would run in 20 major States, 71 cities, 200 regional centers, by August 2010 .The course is based on evidence, skill based diabetes management for 2000 participant all over India. This organization felt the need of the hour and with support of public private partnership picked up the best faculty (endocrinologist) to teach medical professional by having monthly contact sessions which the best approach by giving on job training in order to make best utilization of time and resources. The project aims at improving the access of Indian population to effective diabetes care.

Education is not a single intervention, it is a continuous process. .People and their educational needs evolve over time as their personal needs and treatment plans change based on the progression of their diabetes.

Hence the Government needs to take some initiatives and lay down some polices to boost such courses in future as well. Diabetes education can have a wide range of positive effects at a number of levels. It constitutes a necessary intervention that can address the challenges involved in individualizing and coordinating costly care for people with diabetes. Integrated into a chronic care approach, diabetes education is an effective intervention that supports people as they move between the healthcare system and their community and workplace, as they deal with the complexities involved in following a therapeutic treatment plan while sustaining the self-care behavior that is necessary for effective self-management.

Diabetes education which also addresses potential or existing complications and co-morbid conditions can ultimately lead to better outcomes. An educational intervention, therefore, can be as important and effective as a pharmacological intervention and should be used alongside all therapeutic options. Diabetes education as a health intervention by conducting such short term courses is cost effective measure and is uniquely positioned to meet the challenge of addressing the rising burden of diabetes in India.

Recent achievement for India is to hold diabetes census across the country to assess the enormity and spread of the disease, announced by Union health minister in Mumbai on Friday ,15th May 2010.The census would essentially mean mandatory testing of blood sugar levels for diabetes in the age-group of 25-70 years across the country in the next two years. The idea is to figure out the actual number of the population that is actually suffering from diabetes, or is likely to suffer Plan is yet to be approved by WHO in World health assembly held in Geneva by this month (MAY,2010).[15]

ANNEXURES I:

The annexure below shows the collection of more relevant data in support of the present scenario of health system, and need of manpower as per the existing health status of India.

The Table below is from the Medical council of India site.

Course DM endocrinology	Available in 10 MCI recognized Colleges	Seats available 17
Course DNB endocrinology	Available in 17 recognized colleges by National Board of examinations	Seats available 25
Course MD Medicine	Available in MCI recognized colleges.	Seats available 906
Course DNB Medicine	Available in 25 recognized colleges by National Board of examinations	Seats available 45

Findings: The table above gives the data of available medical faculty with higher qualifications available which is not enough as compared to the rising trend of diabetes. National capacity for management has to be strengthened by improving the knowledge of physicians providing care in the first referral units.

ANNEXURES II:

Below data is related to some information pertaining to diabetes certificate courses run by various organizations for medical professional in India.

Name of the Institution	Course	Duration	Course Curriculum (Major Subjects)	Eligibility Criteria	Fees (Rs.)
Madras Medical College	Certificate Course in Diabetes.	6 Months course	Diabetes mellitus, Acute and Chronic complications	Rural Doctors	NA
Research Society of Diabetes Study In India	Certificate Course in Diabetes.	1 Year course	Epidemiology of Diabetes Mellitus, Classification of Diabetes	M.B.B.S /M.D.	NA
Coimbatore Diabetes Foundation,TN	Clinical Diabetology Training Program	6 Months Course	Prevalence, Diagnosis, Classification of diabetes	M.B.B.S (General Physicians	NA
All India Institute of Diabetes Research, Ahmedabad	Certificate Course in Diabetes.	6 Months Course	Diabetes mellitus, Acute and Chronic complications	M.B.B.S (General Physicians)	20,000
AKN Sinha Institute	Post Graduate Certificate Course in Clinical	100 Credit Hours	Diabetes Mellitus, Management of Diabetes Mellitus	M.B.B.S (General Physicians)	2000 per course
Medversity,	Certification	6 Months	Management of	M.B.B.S /M.D.	20,000

Apollo Hospital	Course in Diabetes	Course	Diabetes Mellitus, Diabetic Complications		
Dr. V. Mohan's Diabetes Specialties Center& MDRF	P.G Certified Diabetes Educators Course	1 Year	Management of Diabetes Mellitus, Diabetic Complications	M.B.B.S /M.D.	Rs.500 draft
Annamalai University	Post Graduate Diploma in health Sciences	24 Months Course	Epidemiology, Classifications of Diabetes	M.B.B.S (General Physicians)	NA
Christian Medical College, Vellore	Fellowship in Diabetes	24 Months Course	Physiology of Diabetes, Diagnosis and Follow-up of Diabetes,	M.B.B.S/M.D.	32,000
MV hospital and Diabetes research center	Diabetes certificate course	1 year course	Diabetes, complications, Management of diabetes.	MBBS/MD/DGO/DNB/	20,000

ANNEXURE III:

The following table showing the duration of certificate course conducted by various institutions:

S. No.	Number of Institutions	Duration of Certificate Course
1	Four institutions	6 months
2	Three institutions	12 months
3	Two institutions	24 months
4	One	Online
5	One	100 hours

Finding: The table above shows the range of duration of certificate courses for improving the skills for short term diabetes Management. There is urgent need to resolve the issues by having short duration courses as it takes long time to be post graduate and specialized in field that too when the seats available are very few as compared to the demand.

References:

1	Dean T Jamison, Joel G. Breman, Anthony R.Measham, (2006), *Disease Contol priorities in Developing Countries*, Oxford University.
2	URL-http//www.who.int/mediacenter/factsheets/fs312/en
3	Reddy.S.K, (2003), *Prevention and Control of Non-Communicable Diseases: Status and Strategies*, ICRER.
4	Mohan.V and Joshi.S, (2008), *Challenges in Diabetes Care in India: Sheer Numbers,Lack of Awareness and Inadequate Control*, JAPI.
5	Mohan. V ,Madan. Z, Jha. R (2002), *Diabetes-Social and Economic perspective in the New Millennium*, JAPI
6	URL-http://www.hindustantimes.com.india
7	URL=http://www.diabetesindia.com/diabetes/itfdci.htm
8	URL-http//www.who.int/mediacenter/factsheets/fs312/en
9	URL-http://www.newsmedical.net/news/20091023/Important Guildlines –from-IDF.htm
10	Sicree R, Shaw J, Zimmet P,(2006), *Diabetes and impaired glucose tolerance in India*, IDF Belgium, pp 15-103.
11	Nakagami T, Qiao Q, Carstensen B, (2003), *TypeII Diabetes-association modified by ethenicity*, Diabetalogia.
12	URL-http://www.globalformhealth.org
13	Rao.M , (2002), *Organization and Diabetes Health Care in Indian Rural Areas*, Diabetologia Croatica
14	Mohan.V and Pradeep.R, (2004), *Epidemiology of Diabetes in different region of India*,JAPI
15	URL-http://timesofindia.indiatimes.com/india/India-to-hold-diabetes-census-Azad/articleshow/5933198.cms
16	URL- www.merinews.com/article/high.patient-doctor ratio in india needs attention/13351.html